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THE REALISTIC ASPECTS OF
MODERN SCIENCE

M.A.,

OF THE LANCASHIRE

London:
JACMILLAN AND CO.
1879.

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THE



REALISTIC ASSUMPTION
OF MODERN SCIENCE
EXAMINED.

BY

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P R E F A C E.

THIS volume is from the pen of the late Thomas Martin Herbert, M.A., Professor of Philosophy and Church History in Lancashire Independent College. He died at the early age of forty-two, in November, 1877, after one day's illness, having occupied this post for little more than twelve months. The subject treated of in this book was thoroughly congenial with his tastes. For years he had given it careful attention, devoting to it all the time he could command. His first published thoughts upon the subject appeared in the *British Quarterly Review* for January, 1874, in an article entitled "Mind and the Science of Energy." The reception with which that article met confirmed his sense of the importance of his argument, and encouraged him to carry out his intention of more fully developing his thoughts in the form in which they are now laid before the public. The task of editing the book has been undertaken by his colleague, James M. Hodgson, M.A., B.D. Except the correction of some clerical errors, and slight changes in a few sentences manifestly obscure or incorrect, which Mr.

Herbert would doubtless have altered had he lived, the treatise has been published as nearly as possible in the form in which he left it. The reader must, however, bear in mind that the manuscript had undergone no final revision for the press by its author. Had this been the case no doubt sundry alterations would have been made, including the recasting of some sections, the erasure of occasional unnecessary repetitions, and the addition of some closing paragraphs which there is proof the author intended to write. The division of the matter into chapters and sections is the work of the editor.

The author's aim in the first part of the work is to show that Realism, when followed out to its logical consequences, confutes its claim to represent things as they are, and demonstrates that its assertions can be valid only within the limits of phenomena, or respecting things as they seem. Various Dualistic Theories of Mind and Matter having been examined, the futility of all attempts to explain the connexion between brain-changes and thoughts is pointed out, and the conclusion is arrived at that it is absolutely impossible to combine movements and thoughts into one self-consistent scheme; but that, dealing with the facts of the material world, as physical science deals with them, we can find no trace of, and no room for, any facts of Consciousness. This conclusion is confirmed by a consideration of the failure of Realistic science to explain either the connexion

of a sensation with its distant object, the realization of a purpose, the rational character of mental life, the moral and spiritual nature of man, the facts of memory and an enduring Ego, the conceptions of Time, Space, and Energy, or our conviction of the existence of an External Power as the cause of sensations. The argument then proceeds to show that it is necessary to transcend phenomena, and recognize *efficient* cause or power in order to escape Idealism, and arrive at anything external; and that Positivists violate their fundamental principle in assuming phenomena to be external and to have occurred in succession. It is contended that whilst it is in virtue of inferences which transcend phenomena that we recognize external force or efficient causation, or believe in the existence either of a permanent Ego, or of other minds like our own, the belief in a God is a conviction resting upon similar grounds, and one that must stand or fall according as those other conclusions are accepted or rejected. It is further maintained that personal attributes furnish the loftiest conceptions we can frame of the Divine Being, and that such conceptions, whilst necessarily relative, are as real and reliable as any knowledge we can possess.



CHAPTER I.

REALISM: ITS DUALISTIC THEORIES OF MIND AND MATTER UNTENABLE.

§ 1. INTRODUCTORY.

- 3 THE conception of the world which, apart from inquiry, everybody entertains, is that of an external and wide-spreading universe, extending in space farther than we are able to see or imagine, and existing through time to which we cannot suppose a limit in the past or in the future. On every side material objects present themselves to us, with varied forms and colours, and other characters of which our different senses inform us, so that we are constantly receiving evidence of their existence. And that they are what they seem is the unquestioned and irresistible conviction of mankind. It is equally unquestioned that the human forms which belong to the world of matter are animated by minds and directed by wills, that they are not, therefore, like most other external objects, mere aggregates of matter, passively obeying the great unconscious forces which act on them and in them, but the bodies of conscious beings, capable of forming and performing designs. Let this ordinary first-hand view of things be called Realism, or the Realistic conception of the world.

Differences would arise directly people began to reason about their impressions of it, but ordinary language and opinion respecting the world may be shortly described in those words. Even where opinions at variance with these first impressions are held, it is customary, because convenient, to use the ordinary language for ordinary purposes.

But the impressions which we receive from the world require various corrections; not because the senses themselves misinform us, but because we are apt to include in what we suppose to be their testimony many inaccurate inferences from it. The first years of childhood are occupied in co-ordinating different impressions and combining them into wholes, and in checking the impressions of one sense by those of another. The same rectifying process takes place whenever we put a novel and curious object to the test of examination by hand and eye.

Many corrections of the impressions of sense have become the common property of at least the civilized world, some of them obtained incidentally, so to speak, others the results of that intentional and systematic inquiry which is called scientific. The earth, for example, is generally known not to be, as it seems, the level and immovable floor of the universe, but one among innumerable revolving globes. The sky is generally known not to be the solid dome it looks, but unbounded space, and the stars distant worlds.

But these and other such additions and correction which our knowledge has received are obviously similar in character to those which we make for ourselves childhood and afterwards. Natural science accepts phenomena which present themselves, and those which the widest observation supplies, aided by mecha-

contrivances like the telescope and the microscope, assumes them, as Realism does, to be what they seem, and carefully comparing them together, pursues the conclusions to which, implicitly and necessarily, they lead.

It follows inevitably, for instance, from the Realistic conception of the material universe, that the colours † we see are not, as they appear to be, qualities of the coloured objects to which they belong, but sensations existing only in the minds of beholders, sensations produced, indeed, by certain characters of the coloured objects, but by characters wholly unlike the sensations. It follows equally that we have no direct perception of the distances of external objects, but form our estimates of them by a complex series of inferences, which habit enables us to make instantaneously, and even unconsciously, thus giving the impression of immediate perception. The nature of light and the mechanism of the eye land the scientific observer in these conclusions. The evidence afforded by the researches of Mr. Darwin and Mr. Herbert Spencer, that the experiences inherited from countless ancestors enter largely into the formation of the physical and mental habits of individuals, goes far to explain the inveterate character of many such impressions which demonstrably are illusions.

But, however such illusions arise, the conclusions of natural science respecting them are obtained by strict inference from the phenomena concerned. Assume the phenomena to be what they seem to be and to act as they seem to act, and the consequences proclaimed by science inevitably follow. If, therefore, we ask in what relation the conceptions of the universe which science gives us stand to the first-hand view of things

lately designated Realism, the reply must be, that scientific opinion is simply common opinion followed out to its consequences, and with some of its inconsistencies rectified thereby. That is to say, the conclusions of natural science give us Realism followed out to its logical issues.

But how far is inference to be pushed ? The examination of phenomena, and of their relation to us, soon raises enquiry as to the essential nature and external existence of *appearances*. But at the threshold of this problem natural science is accustomed to pause. Its authorities pointedly designate the facts with which they deal *phenomena*, and boast that they leave to metaphysicians the seemingly vain endeavour to learn the secrets of real existence.

As we raise no such questions when we handle a strange object in order to satisfy our curiosity about it, but simply check one set of impressions by another, so also the investigations of natural science leave this deeper question untouched, and are confined to the comparison of phenomena, but a comparison conducted on the largest scale, and by the most searching tests. The conclusions thus reached have obviously only such validity as the appearances have. The scientific observer may hold the phenomena with which he deals to be mere appearances ; philosophically he may be an Idealist ; but that circumstance does not affect his scientific work ; for the purposes of natural science he treats phenomena as being what they seem and his conclusions are the proper issues of Realism.

This limitation of the field of science is convenient and even necessary. It carries out the division of labour which is requisite in all the departments of human inquiry and effort. But the human mind,

the scientific spirit, would be untrue to itself if it treated this arbitrary limit as the boundary of human knowledge. For the limit is arbitrary. The rectified conclusions respecting phenomena which we owe to science bear inferences, at least by implication, affecting their essential nature, and to pursue those inferences is but to take up the same work which at this point science lays down, and to follow the logical issues of Realism to consequences equally legitimate. But when the inferences drawn relate to the essential nature of phenomena, the inquiry is said to belong to philosophy rather than to science; or, as the word philosophy is used also in more general senses, the word ontology describes more exactly the doctrine relating to real existence. As, however, no new transcendental faculty can be called into exercise to probe into the essence of things, but every fact which enters consciousness enters it necessarily as an appearance, no daring and ambitious schemes of ontology are possible, but its conclusions must be mainly of a negative kind, though still of the first importance.

It seems, then, that ontology, like science, finds its materials in phenomena—our knowledge, at least of the world, being necessarily limited to the modes in which we are affected by it; and both branches of inquiry must employ the same faculties in dealing with the materials; but the aim of science is to obtain full and accurate acquaintance with phenomena as such, and the aim of ontology is to arrive at conclusions respecting their actual nature, apart from the appearances they present.

The present endeavour is not to frame any system of ontology, but to follow certain conclusions of science to some of the inferences they bear respecting the

nature of phenomena, especially to find whether the scientific knowledge of nature, in other words, the logical issues of Realism, are consistent with the truth of Realism. The conclusions at which science has arrived are, then, precisely the materials for prosecuting this further inquiry whether, by their consistency with each other, they at least suggest that phenomena are reliable beyond the region of appearances ; or whether, on the contrary, Realism, when followed out to its logical consequences, confutes its own claim to represent things as they are, and demonstrates that its conclusions are valid only when applied to appearances.

§ 2. SCIENTIFIC CONCEPTION OF THE MATERIAL UNIVERSE.

It is necessary first to indicate briefly the general character of the material universe as it is interpreted by modern science. The researches in molecular physics, and the doctrine of energy, have lately given marvellous simplicity and clearness to our ever-widening knowledge of it. The science of the molecular constitution of material bodies is still in its infancy, for the senses alone cannot prosecute the quest for ultimate atoms ; but aided by such instruments as the spectro-scope, molecular research has lately made rapid progress. And all the evidence accumulated tends to extricate us from the unintelligible and baffling conceptions of imponderable agents, subtle fluids, and occult principles, working in ways wholly unfamiliar to us, and to substitute for them the movements of infinitesimal particles or molecules, regulated by the same laws of mechanical action which masses of matter appreciable by our senses obey. Each elementary substance consists, we are told, of molecules definite

and unalterable in size and shape, but whether these are strictly indivisible atoms cannot be determined. Compound substances are aggregates of compound molecules ; a drop of water, for example, might, if our senses and instruments were equal to the task, be divided again and again, till a single compound molecule of water was reached, forming a system of diverse atoms, two of hydrogen and one of oxygen, which it would require stronger measures to dissociate.

A compound molecule may have but few components, like water, or it may be an exceedingly complex system of atoms, as the molecules of organized matter are ; and between the atoms composing molecules, as well as between the molecules themselves, whether moving freely or cohering in masses, there are movements of attraction and repulsion, and systems of waves and rhythms. Even the ether which is supposed to fill all space, and whose extreme tenuity enables it to penetrate among the atoms of other bodies as water penetrates sand, is conceived to consist of units which move in conformity with mechanical laws. It is by assuming that its undulations obey the same laws which regulate waves in denser media that the velocities and various properties of light have been mathematically deduced, the results confirming, and sometimes anticipating experiment.

The knowledge obtained of molecular physics corresponds exactly with the doctrine of energy which is now so familiar as not to require detailed exposition. The various forms of energy existing in the material universe are now supposed to constitute a grand store of force which never suffers diminution or increase ; but whenever a certain amount of energy ceases to exist in one form, exactly that quantity is

converted into one or more of the other forms, through a series of transformations which proceed for ever, and manifest themselves in the endless changes of the world.

In the region of inorganic nature, the physical forces, heat, light, electricity, magnetism, chemical affinity, &c., have been proved by experiment to be mutually convertible, and the precise amount of one which is equivalent to a certain precise amount of another has been, at least in many cases, ascertained. In the organic world, the difficulty of experiment is much greater, but there is every reason short of actual demonstration to believe that in the domain of life the forms of force observe the same law ; that is to say, are drawn from the common store of energy, and restored to it again, and change from form to form in proportions equally exact. So that the energies of the animal frame—muscular, nervous, and the rest—are to be ranked among the physical forces as strictly as those of the volcano and the steam-engine.

The energy of the universe has been described as a store which never suffers diminution or increase. But the whole of it is not always operative. Portions of it lie latent for longer or shorter periods, but until they are dissipated by passing into activity, they remain stored up in readiness to perform their natural operations. Thus, when the weight of a clock has derived energy from the arm which wound it, that energy may either be given back at once by a sudden fall, or expended gradually in the movements of the clock, or not expended for an indefinite time, if the weight be lifted on to a shelf. The Leyden jar, charged with electricity, may remain charged, or may dissipate

its energy at one shock or by a series of slighter shocks. And the nervous centres, replenished after food, may expend their energy quickly in exhausting efforts, or part with it slowly in gentle exertions. Energy is, therefore, recognized as being sometimes latent or potential, sometimes actual or kinetic; and the law in question has been shortly expressed by saying that "the sum of the potential and dynamic energies of the universe is a constant quantity."

Again, a distinction must be drawn, at least in thought, between the operations by which alone energy is known to us, and energy itself, conceived of as effecting those operations. The operations of physical energy consist of the movements of matter in every instance which we are able to investigate, as the study of molecules would lead us to expect. We cannot even figure to our minds any change of matter which does not consist of motion. The motions may be either molar or molecular; that is, may be either those of masses ordinarily visible to the eye, or those of the particles composing such masses, which move in orbits generally too small to destroy the cohesion of the particles, or to appear as movements to the sight. Thus heat (as a property of bodies, not the sensation) is a molecular agitation, which may become sufficiently intense to expand, and even to break up the masses exposed to it. It loosens the molecules of ice, for example, till that solid becomes a liquid, and may sever them so violently that they fly apart as steam. Light consists of ethereal undulations, waves of different lengths answering to different colours. In like manner, electricity and magnetism are presented to us simply as matter moving in certain special ways. Chemical changes, again, are revealed to us only as movements.

Acts of muscular energy consist of contractions, acts of nerve-force of movements in the nervous organism, both accompanied by the waste of tissue and necessitating its repair, processes which are forms of chemical change.

The import of these generalizations may be summed up in the words of Professor Huxley :—¹

‘If there is one thing clear about the progress of modern science, it is the tendency to reduce all scientific problems, except those which are purely mathematical, to questions of molecular physics; that is to say, to the attractions, repulsions, motions, and co-ordination of the ultimate particles of matter.’

‘The phenomena of biology and of chemistry are, in their ultimate analysis, questions of molecular physics. Indeed, the fact is acknowledged by all chemists and biologists who look beyond their immediate occupations.’

So Mr. Justice Grove teaches :—²

‘I believe the day is approaching when the two fundamental conceptions of matter and motion will be found sufficient to explain physical phenomena.’

A difficulty suggests itself here, which will be discussed afterwards, as an example of the failure of Realism interpreted by science to bring its own conclusions into harmony. If our conceptions are limited to matter and motion, what notion can we form of energy itself as distinguished from the movements it produces and existing in the latent form which it constantly takes?


¹ Essay on “The Scientific Aspects of Positivism” in *Lay Sermons*, &c., p 183.

² Address at Nottingham, in 1866, as President of the British Association.

Motion ceases to exist, but energy is never destroyed. When a certain amount of it becomes latent, precisely that amount may become operative as motion again after a shorter or longer interval. We cannot, therefore, regard latent energy as a mere negation, yet no other conception of it is left to us, if matter and motion alone are concerned in physical phenomena. A like difficulty meets us in representing to our minds, on this view, an equilibrium of forces, where two or more are exerted in different directions, but no motion takes place, because they neutralize one another. This condition of equilibrium constantly occurs both in molecules and in masses of matter, and it often requires enormous force to sever the unions held together by affinity or cohesion. Here it is not motion, but prodigious resistance to move, which is encountered.

§ 3. THE NERVOUS ORGANISM.

An inquiry into the nature of phenomena takes us, in the first instance, to the strange borderland where material impressions are translated into the seemingly incommensurable equivalents—feelings and ideas. This borderland is limited to certain portions, perhaps to single points, of the nervous organisms of the higher animals. There alone the phenomena of mind and matter appear together, at least to us; as in mere islets of consciousness which rise from the boundless sea of the material universe. There alone the external world of Realism is presented to us, and that contact with it takes place from which inferences respecting its nature can be drawn. What exceptional characters, then, do these nervous organisms possess, to make them the seats of this rare chemistry which brings thoughts



out of a material fabric? The reply of modern science to this question is clear and decided :—Nervous organisms possess no exceptional characters of physical structure or function to account for such extraordinary products as feelings and ideas.

The nervous system of one of the higher animals consists of a central cord lodged in the vertebral column, and enlarged at the top into the masses of the brain, from different parts of which spinal axis bundles of fibres branch off to the limbs, the organs of sense, and every part of the body. Subordinate systems, employed in the functions of organic life, are in connection with this cerebro-spinal apparatus, which is mainly concerned with the distinctive functions of animal life. There are two kinds of nervous tissue—the white, of which the connecting fibres consist, and the grey, of which the central masses and other ganglia are principally composed.

The essential nerve-fibre is an extremely slender thread, enclosed in a fatty sheath, except at its extremities, so as to be shielded from disturbance, and kept separate even from the neighbouring threads with which it is united in a bundle. At its outer extremity in the skin a nerve thread branches into a network of less stable matter. Its inner extremity enters, sooner or later, a ganglion, or mass of grey tissue, softer and less uniform in texture than the white fibres, having cells dispersed through it, and being easily decomposed. From the ganglion run other fibres, some to muscles which contract when disturbed, and others to superior ganglia. These, then, are the typical elements of a nervous system, recurring amid many variations—a nerve-fibre, with its outer extremity expanded into feelers in the skin, and its inner extremity ending in a

ganglion cell, from which another fibre passes out to muscle or gland. But this unit of composition, as it is called, has to be brought into connection with numberless other units in order to constitute the complex nervous system of one of the higher animals; and so, to complete the type, a third fibre must be conceived to pass from the ganglion to a higher centre, which again is in connection with other centres, inferior and superior, those composing the brain being the highest of all, and consisting of various masses of grey tissue, crossed by multitudinous fibres, and in connection, direct or indirect, with all parts of the body.

The nervous organism thus constituted obviously resembles in structure a system of electric telegraph wires, to which it has often been compared, for there the wires pass separately from place to place, and arrive in bundles at the great centres of transmission, through which each part of the system may communicate with every other. And the resemblance holds in regard to function as well as to structure. For though there are essential differences between nerve-force and electricity, the nerve-fibre, like the telegraph-wire, is mainly a *conductor* of force, which is chiefly *generated* in the nerve-centres, which answer, therefore, to the voltaic batteries where electric power is developed, both forces being products of chemical change.

The function of the essential nerve-fibre, as of the telegraph-wire, is, then, simply to transmit impulses from end to end, though there is evidence that the impulse gathers some force as it proceeds. The precise change which takes place in the fibre during the act of transmission is unknown, but it must consist essentially of a wave-movement passing along the line of molecules composing the thread in obedience to mechanical

laws, as a wave might be sent along a rope held loosely by two people. Mr. Herbert Spencer¹ compares the operation to 'the transfer of sensible motion along a 'row of bricks on end, so placed that each in falling 'knocks over its neighbour. For if,' he adds, 'instead of 'bricks, which stand on tolerably broad ends and require 'some force to overturn them, we suppose bricks that 'are delicately balanced on narrow ends; and if we 'further suppose them so constituted that they do not 'dissipate motion by percussion or friction, we shall see 'that the motion transmitted will accumulate. Each 'brick, besides the motion it receives, will pass on 'to the next the motion which it has itself gained in 'falling.'

The case is altered when the molecular wave, having traversed the nerve-fibre, reaches the easily decomposable tissue of the ganglion. The shock ruptures some of the compounds there, and converts the energy they held latent into motion, which is propagated along the different fibres which enter the ganglion; one wave passes down the motor fibre to the muscle, another passes upward to higher centres. Thus the light touch of a fly on the hand may cause the whole body to start, and this happens on the same principle—to quote another illustration from Mr. H. Spencer—as that by which a powder-magazine may be exploded by the touch of a trigger.

It is obvious that the great expenditure of energy involved in these operations must be met by a corresponding supply; and of the provision for that there is evidence in the very large amount of blood which the nervous organism, and especially the nervous centres, receive. Thus, though the brain of man weighs only

¹ *Principles of Psychology*, vol. I., p. 51.

about one-fortieth part of the weight of his body, yet it is estimated—Dr. Carpenter tells us—to receive from one-sixth to one-fifth part of the whole circulating blood. So excess or deficiency of blood tells at once on the nervous system. An increased supply produces increased nervous activity, as in fever, while temporary loss of blood produces fainting.

‘As,’ says Dr. Carpenter,¹ ‘for the origination of the electric current, a certain chemical reaction must take place between the exciting liquid and the galvanic combination of metals, so is it necessary, for the production of nerve-force, that a reaction should take place between the blood, on the one hand, and either the central nerve-cells or the peripheral expansions of the nerve-fibres.’

Thus the nervous organism not only experiences the waste and repair of tissue which take place in every living structure, but must undergo these changes to an extraordinary extent, at least in the nervous centres, since every exertion of nerve-force is a liberation of motion effected by the decomposition of tissue, which needs to be re-formed before it can recover its capability. The expenditure may proceed till nervous exhaustion is reached, when the centres have little more motion to liberate; food and rest are then required; food to supply new and appropriate material, and rest to give time for its absorption into the blood, and subsequent assimilation into nerve-tissue. It follows that nerve-tissue and nerve-force are derived from the common store of material and energy existing in the universe. Professor Bain writes:—

‘Nervous power is generated from the action of the nutriment supplied to the body, and is therefore

¹ *Mental Physiology*, p. 38.

‘of the class of forces having a common origin,
‘and capable of being mutually transmuted. . . .
‘The evidence that establishes the common basis of
‘mechanical, and chemical force, heat, and electricity,
‘namely, their mutual convertibility and common
‘origin, establishes the nerve-force as a member of the
‘same group.’¹

The nervous organism, then, is as much a part of the material universe as anything else is. It is made up of chemical compounds obtained from without, which are in constant process of being built into the fabric and expelled from it. Its functions are to transmit and liberate motion; by peculiar contrivances, indeed, but in conformity with the chemical—which are really the mechanical laws—operating on molecules as well as on masses of matter. The course of the movements which take place is far too intricate and delicate to be exactly traced; but it is a purely mechanical problem, and with superior faculties and means of observation every step in the series of changes might be rigorously deduced on mechanical principles. In the absence of such opportunities, these conclusions are at present incapable of actual demonstration; but since all the external operations which we are able to investigate consist of movements regulated by the laws of energy, changes of a different kind would be ruptures of physical continuity which the mind rejects as violations of the unity of nature, and which, moreover, we are unable even to conceive. So the matter presents itself to disciples of science; but our present task is not to argue for or against these conclusions, but to take them as being generally accepted, and follow them out to the particular inferences mentioned above.

¹ *The Senses and the Intellect*, pp. 59, 60.

§ 4. PHYSICAL CONDITIONS OF SENSATION.

We have seen that the nervous organism forms the borderland within which material impressions present themselves as feelings and ideas. If so, the very intelligible conceptions of the structure and functions of the nerves furnished by science, and now briefly described, must obviously tend to give definite views of this strange transformation, or, at least, must assign limits to the problem it presents. What happens, then, in a simple case which implies the transformation in question? Suppose that portion of the nervous organism, called the retina, is exposed to the vibratory action we call light. Like the outer extremities of other nerves of special sense, the expanded surface of the retina contains portions of unstable tissue and other mechanical contrivances for intensifying the impressions received. On this specially sensitive surface the ethereal light-waves break, and their impact originates nervous undulations. No energy is lost, but a certain amount, which before operated as vibrations of ether, now operates as molecular movements of the nervous organism, which pass in waves along the incarrying nerves to the optic ganglion in the brain. When the impression arrives there a *sensation* is experienced which, by a misleading use of words, we are accustomed to call by the same name as the ethereal waves which agitate the retina. The ethereal undulations are called *light*, and so also is the *feeling*, though no two things can be less alike than what we understand by an undulation and a feeling, and though the whole series of movements in the nervous organism intervene between the two. We commonly suppose, indeed, that the feeling of light

exists in the eye, as we do that a sensation of touch resides in a finger, or one of pain in a foot, or a tooth ; but there seems to be conclusive evidence that these localizations of feeling are illusive, and that consciousness is seated exclusively in the brain. If, for example, the spinal cord be severed above the lower limbs, but otherwise uninjured, they lose all sensibility, and the will has no more control over them ; but they still move readily in answer to a stimulus applied from without, the movement being purely automatic or reflex. Dr. Carpenter writes :—¹

‘The fully developed consciousness unhesitatingly refers sense impressions to the *origins* of the nerves that convey them to the sensorium ; those of any special sense to the particular organ of that sense, and those of common sensation to the part in which the afferent nerve-trunks have their roots. There is, as Professor Huxley has phrased it, “an *extradition* of that consciousness which has its seat in the brain, to a definite point of the body, which takes place without our volition, and may give rise to ideas which are contrary to fact.” Thus, after amputations, the patients are for some time affected with sensations (probably excited by irritation at the cut ends of the nerves), which they refer to the fingers or toes of the lost limbs ; and flashes of light are often experienced when the eye has been completely extirpated, as also when its structure has been destroyed by disease.’

On the one hand, then, external impressions are never felt as sensations unless they reach the brain ; and on the other hand, when impressions do arise there, they are ascribed to the external extremity of the nerve

¹ *Mental Physiology*, p. 150.

which brings them, even though the impressions may have originated nearer to the point of feeling.

It is held, therefore, that feelings are experienced only when these waves of movement reach the brain, or a certain part or parts of the brain.

In his book just quoted, Dr. Carpenter gives many ⁺ strong reasons for believing that consciousness is seated only in the sensorium, or aggregate of sense-ganglia which lie at the base of the brain, and from which nerve-fibres proceed to all parts of the cerebrum as they do to the organs of sense. He supposes, therefore, that the cerebrum and the sense organs stand in similar relations to the sensorium; that just as impressions made on the sense organs do not give rise to sensations till they have reached the sensorium, so neither do we become conscious of cerebral changes till they have been conveyed to the same centre; and that the names we give to the feelings arising there depend on the sources from which the nerve-waves which excited the feelings have come, those arriving from the sense organs being known as sensations and perceptions, and those coming from the cerebrum as ideas, emotions, and volitions, its functions being to transmit to the sensorium the physical equivalents of these states of consciousness. Dr. Carpenter describes his view in the following interesting passage:—

‘The brain is an *aggregate* of ganglionic centres ‘having very distinct functions; and the *cerebrum*, ‘which in man is by far the largest of these centres, ‘is *not* the part of the brain which ministers to what ‘may be called the “outer life” of the animal, but is ‘the instrument exclusively of its “inner life,” that is, ‘of those *psychical* operations, of which the sensations ‘received from the outer world constitute the mental

‘*pabulum*. Now, this *inner* life seems to have no
‘existence in that vast section of the animal kingdom
‘which is most distinguished by the activity of its
‘*outer* life, viz., the class of insects; and taking the
‘nervous system of that class as the type of an auto-
‘matic apparatus which furnishes all the conditions
‘required for sensation and motion, as well as for the
‘working of those fixed or mechanical modes of
‘action which we term *instincts*, we have found that
‘a precisely analogous automatic apparatus exists
‘through the entire vertebrated series, that it consti-
‘tutes almost the whole of the nervous system of the
‘fish, and that it is distinctly recognizable as the
‘fundamental or essential part of that of man, in whom
‘the vast relative development of the cerebrum merely
‘indicates a *superaddition* of *new* functions, without
‘affording the least ground to believe that there is any
‘*transfer* to it of the proper attributes of the auto-
‘matic apparatus. . . . Further, it has been posi-
‘tively established, alike by experiments in animals
‘and by observation of the phenomena of disease and
‘accident in man, that the substance of the cerebrum
‘is itself *insensible*; that is, that no injury done to it,
‘or physical impression made upon it, is *felt* by the
‘subject of it. As it is clear, therefore, that the
‘presence of the cerebrum is not essential to conscious-
‘ness, we have next to inquire in what way it seems
‘most likely that consciousness is affected by cerebral
‘changes.

‘When we compare the *anatomical* relation of the
‘sensorium, on the one hand, to the cortical layer of
‘the cerebrum, and on the other to that retinal expan-
‘sion of ganglionic matter which is the recipient of
‘visual impressions, we find the two to be so precisely

‘identical, as to suggest that its *physiological* relation to those two organs must be the same; and as we only become *conscious* of the luminous impressions by which nerve-force has been excited in the retina, when the transmission of that nerve-force through the nerve of *external* sense has excited a change in the sensorium, so it would seem probable that we only become *conscious* of the further change excited in our cerebrum by the sensorial stimulus transmitted along its *ascending* fibres, when the reflexion of the cerebral modification along its *descending* fibres—the nerves of the internal senses—has brought it to react on the sensorium. In this point of view the sensorium is the one centre of consciousness for visual impressions on the eye (and, by analogy, on the other organs of sense), and for ideational or emotional modifications in the cerebrum. . . . According to this view, we no more *think* or *feel* with our cerebrum than we *see* with our eyes; but the Ego becomes conscious through the same instrumentality of the retinal changes which are translated (as it were) by the sensorium into visual sensations, and of the cerebral changes which it translates into ideas or emotions.’¹ The fact that some nerve-changes do not enter consciousness while others do is thus explained by Dr. Carpenter in accordance with this theory:—

‘Every excitor *impression* travels in the *upward* direction, if it meet with no interruption, until it reaches the cerebrum, without exciting any reflex movements in its course. When it arrives at the sensorium it makes an impression on the consciousness of the individual, and thus gives rise to a *sensation*, and the change there induced, being propagated

¹ *Ibid.*, pp. 109, 111.

'onwards to the cerebrum, becomes the occasion of
'further changes in its cortical substance, the down-
'ward reflection of whose results to the sensorium gives
'rise to the formation of an *idea*. . . .

'But if this ordinary upward course be anywhere
'interrupted, the impression will then exert its power
'in a *transverse* direction, and a reflex action will be
'the result; the nature of this being dependent upon
'the part of the cerebro-spinal axis at which the ascent
'had been checked. Thus, if the interruption be
'produced by division or injury of the spinal cord, so
'that its lower part is cut off from communication with
'the cephalic centres, this portion then acts as an inde-
'pendent centre. . . . So, again, if the impression
'should be conveyed to the sensorium, but should be
'prevented by the removal of the cerebrum, or by its
'state of functional inactivity, or by the direction of
'its activity into some other channel, from calling
'forth ideas through the instrumentality of that
'organ, it may react upon the motor apparatus by the
'reflex power of the sensory ganglia themselves. . . .
' . . . But further, even the cerebrum responds automa-
'tically to impressions fitted to excite it to reflex
'action, when from any cause the will is in abeyance.
' . . . Thus, in the states of reverie, dreaming, som-
'nambulism, &c., whether spontaneous or artificially
'induced, *ideas* which take full possession of the
'mind, and from which it cannot free itself, may excite
'respondent *ideo-motor* actions; as happens also when
'the force of the idea is morbidly exaggerated, and
'the will is not suspended, but merely weakened, as
'in many forms of insanity.'³

If the sensorium, or the brain, as a whole, is the only

³ *Ibid.*, pp. 123-125.

seat of consciousness, it follows that the nervous organism, as well as the rest of the body, belongs to the external world, and is no part of the perceiving mind, unless those portions of the brain, whose changes are the actual accompaniments of thought, be excepted. The other nerve-fibres and ganglia, as much as the bones and the muscles, as much as all contrivances to aid hand and eye, are mechanical instruments external to the mind.

§ 5. RELATION BETWEEN NEUROSIS AND PSYCHOSIS.

The borderland of matter and mind consists, then, of those parts of the brain whose changes are the actual accompaniments of thought, where movements produce, or become, feelings. But if the region where the two coexist be more extended, the problem of their relation will not be materially affected. What is that relation? The two are connected in the most intimate manner. A sensation of light, for instance, is never experienced unless a wave reaches the brain along the optic nerve; and there is reason to believe, not only that every other sensation is equally dependent on the agitation of its particular nerve, but that every mental process, whether of intellect, emotion, or will, has its accompanying physical process; in a word, that each act of consciousness corresponds to a certain brain change. Professor Huxley pronounces it 'very necessary to keep up a clear distinction between these two processes,' and proposes that 'the one be called *neurosis*, and the other *psychosis*.'¹

In pursuance now of our object to test the essential truth of Realism by following out, to inferences affect-

¹ "Mr. Darwin and his Critics," *Contemporary Review*, Nov., 1871.

ing its essential character, certain conclusions of science, let us inquire what account science is able to give us of the relation between these two processes. We have obtained from it some very definite conceptions of the structure and functions of the nervous organism. That organism stands before our minds as a material fabric, in constant process of change, its changes being movements of material particles, taking place in obedience to mechanical laws. How, then, are we to weave in with these intelligible conceptions of movement acts of consciousness which accompany some, and only some, of these material changes?

The simplest supposition is, that acts of consciousness and brain changes are links of different kinds in the same chains of sequents, diverse operations of energy, mutually convertible, like light and heat and the other physical forces. Many obvious facts favour this view. We have seen that every exertion of mental activity expends nervous energy; that nervous exhaustion brings incapacity for thought, and that the thinking capacity is recovered by the nervous replenishment derived from food and rest; in a word, that the variations of mental and physical power are just what they would be if mental acts were links with physical acts in the same chains of sequents, and were in the same sense products of physical energy. Dr. Carpenter upholds this view in his recent work on "Mental Physiology." Describing what takes place in sight, he says:—

‘Light excites nerve force, and the transmission of
‘this nerve force excites the activity of that part of
‘the brain which is the instrument of our visual con-
‘sciousness. Now, in what way the *physical* change
‘thus excited in the sensorium is translated, so to

‘speak, into that *psychical* change which we call *seeing*
 ‘the object whose image was formed upon our retina,
 ‘we know nothing whatever; but we are equally
 ‘ignorant of the way in which light produces chemical
 ‘change, and chemical change excites nerve force.
 ‘And all we can say is, that there is just as close a
 ‘succession of sequences—as intimate a causal relation
 ‘between antecedent and consequent—in the one case
 ‘as there is in the other. In other words, there is
 ‘just the same evidence of what has been termed
 ‘*correlation* between *nerve force* and that primary state
 ‘of mental activity which we call *sensation*, that there
 ‘is between *light* and *nerve force*; each antecedent,
 ‘when the physiological mechanism is in working
 ‘order, being invariably followed by its corresponding
 ‘consequent.’¹ (p. 13.)

Professor Huxley has used language to the same effect:—

‘All vital action may be said to be the result of the
 ‘molecular forces of the protoplasm which displays it.
 ‘And if so, it must be true in the same sense, and to
 ‘the same extent, that the thoughts to which I am
 ‘now giving utterance, and your thoughts regarding
 ‘them, are the expression of molecular changes in
 ‘that matter of life which is the source of our other
 ‘vital phenomena.’²

‘As the electric force, the light-waves, and the
 ‘nerve vibrations, caused by the impact of the light

¹ Dr. Carpenter proceeds to maintain that “the like correlation may be shown to exist between mental states and the form of nerve force which calls forth *motion* through the muscular apparatus”; and he concludes:—
 ‘That mental antecedents can thus call forth physical consequents is just
 ‘as certain as that physical antecedents can call forth mental consequents;
 ‘and thus the correlation between mind-force and nerve-force is shown to
 ‘be complete *both ways*, each being able to excite the other.’ (p. 14.)

² “On the Physical Basis of Life,” *Lay Sermons*, &c.

'waves on the retina, are all expression of the molecular changes which are taking place in the elements of the [electric] battery; so consciousness is in the same sense an expression of the molecular changes which take place in that nervous matter which is the organ of consciousness.'¹

We have seen already that Professor Huxley deems it very necessary to keep up a clear distinction between brain-movements and thoughts, which he distinguishes as *neurosis* and *psychosis*, and his endorsement of the following passage from Dr. Tyndall shows the importance which both attach to the division :—

'The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. Granted that a definite thought and a definite molecular action in the brain occur simultaneously, we do not possess the intellectual organ, nor apparently any rudiments of the organ, which would enable us to pass by a process of reasoning from the one to the other. They appear together, but we do not know why. Were our minds and senses so expanded, strengthened, and illuminated as to enable us to see and feel the very molecules of the brain; were we capable of following all their motions, all their groupings, all their electric discharges, if such there be; and were we intimately acquainted with the corresponding states of thought and feeling, we should be as far as ever from the solution of the problem, "How are these physical processes connected with the facts of consciousness?" The chasm between the two classes of phenomena would still remain intellectually impassable.'²

¹ "Mr. Darwin and his Critics," *Contemporary Review*, November, 1871.

² "Scientific Materialism." Address delivered to the British Association at Norwich.

Of this passage Professor Huxley has written:—

‘I know nothing whatever, and never hope to know anything, of the steps by which the passage from molecular movement to states of consciousness is effected, and I entirely agree with the sense of the passage . . . from Dr. Tyndall.’¹

This passage, which proclaims that we are wholly unable to understand how physical processes are connected with the facts of consciousness, Professor Huxley would probably reconcile with the former passages, which represent thoughts as products of physical energy “in the same sense and to the same extent” as the various forms of movement are, by the following statement from the same paper:—

‘I confess I can no more form any conception of what happens [when the motion of one billiard ball is communicated to another] than of what takes place when the motion of particles of my nervous matters gives rise to the state of consciousness I call pain.’¹

So Dr. Carpenter meets the difficulty in the passage recently quoted:—


‘In what way the *physical* change excited in the sensorium is translated into that *psychical* change which we call *seeing* the object whose image was formed upon our retina we know nothing whatever; *but we are equally ignorant* of the way in which light produces chemical change,’ &c.²

But it may be shown that this plausible view will not bear to be confronted with the account of the material universe which is given by the modern doctrines of energy and molecular physics; and that the

¹ “Mr. Darwin and his Critics,” *Contemporary Review*, November, 1871.

² *Mental Physiology*, p. 13.

parallelism drawn above between thoughts and the various forms of movement, as if all involved the same difficulties, does not hold. For let us follow to some of its consequences the present supposition that thoughts and physical changes are different manifestations of a common energy. Since, as we have seen, all physical changes are presented to us as varieties of movement, while we are now regarding thought as distinct from the brain-changes amid which it arises, —separated from them, Professor Tyndall affirms, by 'a chasm intellectually impassable,'—it follows, on the view before us, that thought is the single product of energy which is not motion. Consider the situation, then, when a thought occurs. We have seen that the nervous organism, like every other living substance, and to a far higher degree than most, is in constant process of disintegration and repair. With adequate means of observation, the complete series of these changes which separate nervous replenishment from nervous exhaustion might be traced, each change exactly proportioned in nature and amount to those which preceded it, and all consisting—to quote Professor Huxley's words again—of 'the attractions, repulsions, motions, and co-ordination of the ultimate particles of matter.' But since, on the present supposition, thought is not itself a material change, the energy which produces thought cannot be producing material changes at the same time. Therefore, during the act of thought, there must be a certain amount of energy withdrawn to perform it, leaving so much less, for that period, to effect material changes. Could observation be directed to this point, the occurrence of the psychical process would reveal itself—if in no other way, yet at least in the temporary diminution and subsequent resumption



of the full amount of change going forward in the material structure, producing an interruption in the series of material changes such as the most perfect analysis of the physical process would bring into full prominence and fail to explain. We cannot imagine that a thought would present itself to a physiological observer in any other way than as a *fault* in the series of physical sequents. A certain material antecedent, or set of antecedents, would have material consequents deficient in number or vigour, because part at least of the energy employed in them was gone to produce a psychical consequent. And again, those enfeebled material consequents would be followed by consequents in excess as to number or vigour as soon as the energy withdrawn had been restored. It need hardly be said that such breaks in the chains of material sequents are without example in our experience of nature, which tells us that every movement affects the neighbouring particles according to the laws of mechanics. But on the supposition before us, certain movements of a particle or particles produce no immediate effect on the neighbouring particles, but give rise to a thought instead, after which a movement sets up in the neighbouring particles, its immediate antecedent being not a material impulse, but a thought. The chain of material particles in question may be compared to a row of billiard balls in contact—both are subject to mechanical laws. Suppose, then, that one of these balls produced by its motion no corresponding movement in its neighbour ball, but gave rise to a thought instead, and that the movement was resumed when the thought passed away. The supposition before us amounts to that absurdity, and cannot be entertained. Professor Bain expresses this conclusion in the following words:—

‘It would be incompatible with everything we know
‘of the cerebral action to suppose that the physical
‘chain ends abruptly in a physical void, occupied
‘by an immaterial substance, which immaterial sub-
‘stance, after working alone, imparts its results
‘to the other edge of the physical break, and
‘determines the active response—two shores of the
‘material, with an intervening ocean of the immaterial.
‘There is, in fact, no rupture of nervous continuity’¹

Even if movements and thoughts did stand as antecedents and sequents, thoughts could not fairly be regarded as presenting only such difficulties as the other operations of energy occasion, which are simply varieties of movement, succeeding one another as resultants of the composition of forces; but the fact is, that the difficulties arising out of the entirely unique character of thoughts are such as to exclude them altogether from the chains of physical sequents.

It may be suggested that since the energy of the nervous organism is known to exist at times in a latent form (that is, in a form which does not manifest itself in material changes), it may be possible for it, while thus physically in abeyance, to become operative as thought, and then pass on to resume the production of material changes. But, in the first place, the energy called latent is employed in maintaining the chemical unions of the elaborate compounds which form the nervous organism, so that these compounds would
+ break up, and their constituents yield to other attractions, on the withdrawal of energy from them to generate thought. To suppose that energy, when physically latent, is at liberty to do work which does not consist of material changes such as it performs

¹ *Mind and Body*, p. 131.

when physically operative, would be equivalent to supposing that a weight in the hand, which has potential energy to fall to the ground, might have that energy devoted for a time to other purposes, without leaving any physical trace of these extraphysical operations ; but, of course, if any energy were so withdrawn, the pressure of the weight on the hand, and the muscular strain which that causes, would be diminished in the same degree ; to suppose which is absurd. Moreover, thought would not itself use up energy, as all the evidence shows that it does, and the present hypothesis supposes, if the energy it employed remained latent in the same compound after as before it ; nor would it be accompanied by any physical change, nor would it occasion any ; for if it did, it must have altered the physical condition of the compound, and then the difficulties would recur which the present suggestion is intended to meet.

Nor will it remove the difficulty of supposing breaks in the chain of material sequents if the physical antecedents of a thought be conceived to have regular physical consequents, and the thought to be an exceptional effect outside the physical chain. If the thought be effected at the expense of the physical energy, its occurrence must temporarily impoverish the physical sequences in the incredible way described above, and therefore the physical consequents cannot be the same as they would otherwise have been. Moreover, every consequent must become in its turn an antecedent, or else the energy it employed would be finally lost. So the energy which, after producing certain physical antecedents, takes the form of thought, must necessarily pass on to assume other forms, which are not thought, but its *physical* consequents. If, then,

thoughts are distinct operations of physical energy they must be the antecedents, as well as the consequents, of physical changes, and then they lie open to all the difficulties which ruptures of physical continuity imply.

§ 6. DR. CARPENTER'S THEORY OF THE RELATION BETWEEN CONSCIOUSNESS AND PHYSICAL ENERGY.

To those difficulties Dr. Carpenter's account of the problem is open, and to others arising out of the special character he ascribes to the will. Perhaps the clearest exposition of his view is given in these words :—

'The connection between mind and body is such that the actions of each have, in this present state of existence, a definite *causal relation* to those of the other, so that the actions of our minds, *in so far as they are carried on without any interference from our will*, may be considered as "functions of the brain." On the other hand, in the control which the will can exert over the *direction* of the thoughts, and over the *motive force* exerted by the feelings, we have the evidence of a new and independent power, which may either oppose or concur with the automatic tendencies and which, according as it is habitually exerted, tends to render the Ego *a free agent*. And truly, in the existence of this power, which is capable of thus regulating the very highest of those operations that are causally related to corporeal states, we find a better evidence than we gain from the study of any other part of our psychical nature, that there is an entity wherein man's nobility essentially consists which does not depend for its existence on any play of physical or vital forces, but which makes these

'forces subservient to its determinations. It is, in fact, in virtue of the will, that we are *not* mere thinking automata.'¹

This explanation of the connection between mind and body multiplies the difficulties of a perplexing problem. In the first place, thoughts are represented as distinct operations of energy, like the various modes of motion, that is as breaks in the continuity of cerebral changes, which, as we have seen, is a supposition at variance with all our knowledge of nature. Still, thoughts so conceived of are manifestations of physical energy. But this character is ascribed by Dr. Carpenter only to some of our mental operations, those, namely, which 'are carried on without any interference from our will.' Volitions, on the contrary, proceed, we are told, from 'a new and independent power,' 'an entity which does not depend for its existence on any play of physical or vital forces, but which makes these forces subordinate to its determinations.' This 'new and independent power' is, then, a separate fund of energy, expending itself in the physical universe, and influencing the operations there. Therefore it has physical effects, but it has not physical causes. It keeps pouring energy into the material universe, but from what source does it recoup itself?

And these two classes of mental operations which have totally different origins, that is to say, volitions, which are independent of physical changes, and acts other than volitions which are causally dependent on physical changes, are so intimately blended in our mental history that, though distinguished by our analysis, they are never separate in reality; but what we denominate sensations, judgments, emotions, voli-

¹ *Mental Physiology*, pp. 26, 27.

tions, are generally portions or aspects of complete states or operations of mind into which more than one of these forms of intelligence enter. Anyhow, mental acts have too much in common to make it possible they should have such different origins as those ascribed to them here. According to Dr. Carpenter, however, there are three distinct types of activity—(1) Material operations which are modes of motion ; (2) Mental operations correlated with material changes, and causally dependent on them ; (3) Mental operations produced by an independent power, and so working physical effects, though not having physical causes. But while Dr. Carpenter presents us with three incommensurable types of activity, science presents us with only one ; for to say nothing of the difficulties created by division (3), the rupture of physical continuity implied by division (2) violates her widest inductions. In short, science presents us with no mental facts among her physical phenomena.

Dr. Carpenter's *Mental Physiology*, in which the passage just quoted occurs, was published in 1874 ; but in the *Contemporary Review* for February, 1875, a paper appeared by him " On the Doctrine of Human Automatism," which expresses some change of view, due, probably, to the discussion on Animal Automatism initiated by Professor Huxley's lecture on the subject at the meeting of the British Association at Belfast in August, 1874, of which further mention will be made presently. But Dr. Carpenter's later statements had better be compared at once with those just criticised. He writes :—

'That the doctrine of the conservation of energy
'holds good in the animal body as completely as it
'does in the universe around, I should be among the

'last to dispute ; that in the most powerful muscular effort which can be called forth by the human will, there is no more a creation of force than in an automatic convulsion, I believe as firmly as Professor Clifford ; but just as a rider utilizes and directs the motor energy of his horse, so, I maintain, does the mind of man use and direct (within certain limits) the physical energy of his body ; turning this to account not only in muscular movement, but also in those cerebral changes which serve as the bases of further mental operations.'¹

If the human body is entirely governed by the law of the conservation of energy, then the will is not, as described before, 'a new and independent power, . . . an entity wherein man's nobility essentially consists, which does not depend for its existence on any play of physical or vital forces, but which makes these forces subservient to its determinations.'²

And the distinction drawn on the following page between the 'share the will takes in the operations of our minds and in the direction of our conduct, and what must be set down to that automatic activity of our psychical nature, which is correlated with cerebral changes,'³ will have to be abandoned.

But the illustration of the horse indicates that Dr. Carpenter does not suppose himself to have sacrificed so much ; for that illustration seems to represent the will as not so much itself a power, as a something which 'uses and directs the physical energy of the body.' The suggestion appears to be that there is no creation of force, because the will, though an entity independent of physical energy,

¹ *Contemporary Review*, February, 1875, p. 398.

² *Mental Physiology*, p. 27.

³ *Ibid*, p. 28.

makes use of that alone to effect its purposes. But the comparison will not justify this conclusion. A rider who employs *only* the energy of his horse must remain entirely passive; the moment he begins to *direct* the animal he must expend some power of his own. The power he exerts is small indeed in comparison with that of his horse, as the power of a helmsman is small in comparison with the forces at work when he steers a vessel of vast burthen through stormy waves, or as the power a soldier exerts is small, who, by touching a trigger, blows up a fort; but some intervention of power there must be in any and every case in which the course of events is directed or modified.

In fact, the parallel drawn between a horse controlled by its rider and the body controlled by the will fails in the particular for the sake of which it is employed. A rider exerts some of his own energy in directing that of his horse; and his doing so occasions no difficulty, for his body belongs to the physical universe as much as his horse does, and influences other bodies in strict accordance with its laws. But the assumption is that the will does not belong to the physical universe. If, then, it exerts energy of its own, the body which it controls is not wholly subject to the law of energy. But if it has no power of its own, then it has no control over the body. In either case the analogy of the horse and its rider fails.

Therefore, in this later statement Dr. Carpenter seems to surrender by implication, though not avowedly, his former account of the will as an independent power, influencing the body, but not correlated with cerebral changes—to surrender, that is, the third type of activity to be deduced from his book. The following quotation from the paper on automatism avows a

change of view in regard to the second type of activity mentioned before :—

‘The special controlling and directing power of the cephalic ganglia [of insects] may be equally exerted, whether the excitement of sensation (1) be a necessary link in the chain of sequences ; or (2) be simply a concomitant, which must occur when the mechanism is in complete working order ; or (3), as some maintain, is not really produced by impressions transmitted by the afferent nerves to the cephalic ganglia, any more than it is by the impressions which excite the separated ganglia of the ventral cord to reflex action. The first having been my former opinion, I was led to distinguish the actions automatically excited through the cephalic ganglia as *sensori-motor* ; but I now quite admit that there is much to be said in favour of the second. For the denial of consciousness to insects, however, I cannot see any other argument than that if “molecular motion” be competent to do the work, sensation would be a useless surplusage—an application of the doctrine of final causes which can scarcely be admitted as having any scientific validity.’¹

Here Dr. Carpenter places, as alternative views, the opinion that sensations are links in the chain of physical sequences, and the opinion that they are surplus concomitants of physical sequences ; and having, in his *Mental Physiology*, strongly maintained the former view, contending ‘that the connection between mind and body is such that the actions of each have . . . a definite *causal relation* to those of the other’ (p. 27), and that ‘the correlation between mind-force and nerve-force is shown to be

¹ *Contemporary Review*, 1875, p. 400.

'complete both ways' (p. 14), he is now at least half disposed to abandon this—the second type of activity before ascribed to him—for an opinion which seems to exclude mental facts from the series of physical changes. But, as we have already seen (page 31), mental facts cannot but belong to the series of physical changes, must be the antecedents as well as the consequents of physical processes, if they are still supposed to be effected at the expense of physical energy; and to suppose them not effected at its expense is, as will be shown presently, to suppose that the worlds of mind and matter are entirely separate.

So, then, Dr. Carpenter, having taught in his *Mental Physiology* that there are in the human body three different types of activity, his later views leave only the first of these—namely, movements of matter—intact. The second class—mental operations which are causally dependent on material changes—he now inclines to regard as concomitants of certain of those changes, rather than as links interposed between them. But as these concomitants occur only 'when the mechanism is in complete working order,' they are still effects of some cerebral changes; and if so, they must, we have seen, be the causes of others. This view, therefore, endeavours in vain to escape the difficulties of supposing ruptures of physical continuity. The third type of activity, which represents the will as an independent power, working physical effects, but not determined by physical causes (exactly contrary to the 'concomitants' just mentioned), Dr. Carpenter still professes to uphold; but he abandons it by implication when he protests 'that the doctrine of the 'conservation of energy holds good in the animal 'body as completely as it does in the universe around.'

§ 7. PROFESSOR HUXLEY'S VIEWS ON THE CONNECTION
BETWEEN CONSCIOUS STATES AND THEIR PHYSICAL
ANTECEDENTS.

Let us examine next the language of Professor Huxley in regard to this problem. We have already seen that, on the one hand—like Dr. Tyndall and Dr. Carpenter—he draws a clear distinction between nerve-changes and thoughts, denominating the one process *neurosis*, and the other *psychosis*. On the other hand, he teaches, as Dr. Carpenter does, that consciousness is 'an expression of the molecular changes which take place in that nervous matter which is the organ of 'consciousness' in the same sense 'as the electric force, the light-waves, and the nerve vibrations caused by the impact of the light-waves on the retina, are all expressions of the molecular changes which are taking place in the elements of the [electric] battery.'¹

On this view thoughts are separate links in the chains of physical sequences, and involve, as we have seen, impossible ruptures of physical continuity whenever they occur. Professor Huxley, indeed, like Dr. Carpenter, meets this objection by declaring that we are as ignorant of the connection between two successive physical changes as we are when one of the two is mental. No doubt that is true. The causal nexus presents nothing to us except the invariable and unconditional sequence of antecedent and consequent, and we cannot from our knowledge of what happens in causation see why a thought should not follow a movement as easily as one movement follows another.

¹ Paper on "Mr. Darwin and his Critics," *Contemporary Review*, Nov., 1871.

But the question before us concerns the fact rather than the explanation of it. It is by no means ascertained that thoughts are exceptional links in the chains of physical sequents. On the contrary, that is the very point in debate, and the objection urged against their being such is, not that ruptures of physical continuity would be inexplicable, for most things are that to us, but that they would be at variance with all our experience of nature, and are by no means supported by indubitable evidence here. The transformation of one mode of motion into another, on the contrary, although inexplicable, accords with universal experience.

Again, how is it possible to insist, as Professor Huxley does, on the essential distinction between molecular movements and states of consciousness, and at the same time call consciousness an expression of molecular changes *in the same sense* as the effects of discharges from an electric battery are expressions of molecular changes within it? For all the effects of such discharges (except sensations) *are* molecular changes, like their causes, while states of consciousness are divided from all modes of motion by 'a chasm intellectually impassable.' In the one case molecular changes are followed by other molecular changes in harmony with invariable law. In the other case they are followed by processes which, if interposed among physical sequents, violate invariable law. In fact, the radical distinction drawn by Professors Tyndall and Huxley between thoughts and movements, taken in connection with the law which forbids the transformation of physical energy into anything which is not physical energy, actual or potential, places the facts of consciousness outside the chains of physical

sequences, and at least makes them expressions of molecular changes *in a different sense* from succeeding molecular changes. If we follow the course of the physical chains at the point where a thought occurs, we shall, by the law of energy, find the entire amount of force operating in the antecedents of the thought pass into its physical consequents, exactly as if no 'result' of thought had arisen. Thought, then, cannot be the result of its physical antecedents 'in the same sense and to the same extent' as the physical consequents into which the whole energy at work in those antecedents passes.

Nor do our difficulties diminish by calling thought '*a function of matter*,' as Professor Huxley frequently does. He writes:—'There is every reason to believe 'that consciousness is a function of nervous matter, 'when that nervous matter has attained a certain 'degree of organization, just as we know the other 'actions to which the nervous system ministers, such 'as reflex action, and the like, to be.'¹

Reflex action, and all the other actions to which the nervous system ministers, consist simply of *movements*, as Professor Huxley himself teaches; they are all forms of *neurosis*, from which *psychosis*, or consciousness, is to be clearly distinguished. So far, this passage presents the matter as other quotations have done. Again, in a lecture by Professor Huxley on 'Descartes,' the words occur:—

'Thought is as much a function of matter as motion is.'²

On this we may observe, that it is scarcely accurate to call thought a function of matter simply, distinct

¹ "Mr. Darwin and his Critics," *Contemporary Review*, November, 1871.


² *Macmillan's Magazine*, May, 1870.

from motion, since it arises only in connection with a particular mode of motion, namely, an act of nervous energy. It seems rather the function of a mode of motion; in other words, the function of a function. There is no evidence to connect thought with matter at rest, or with matter at all, except as matter is the vehicle of energy in action, or motion. As Dr. Tyndall says, it is 'a definite thought and a definite 'molecular action in the brain' which 'appear together, but we do not know why.' Moreover, can thought be fairly described as 'as much a function of matter as motion is?' A function, as the word is employed here, is an operation or act. An act is a change, and must consist, according to our powers of conception, of something acting or changing. Thus, motion is a function of matter because it consists of matter acting or changing. But when the act of thought takes place, the thought does not consist of matter acting or changing, for the change of matter accompanying thought is motion, and on the present supposition the two processes are entirely distinct. Motion and change of matter are one and the same thing; but thought and change of matter are two very different things, if this distinction is maintained. Hence motion and thought seem at least to stand in very different relations to matter. It may perhaps be suggested, that though motion is the only kind of change to which we can conceive matter subject, it may undergo kinds of change of which we have no conception, and thought may be one of them. But if we suppose that thought consists of some change of matter other than motion, of a change, therefore, which leaves the matter which experiences it physically unaffected by its occurrence, in the first place, we

connect thought with matter at rest, when all the evidence connects it with matter in motion; and in the next place, since this occult material change is supposed to be effected at the expense of the physical energy of the organism, so much of that energy must be temporarily withdrawn from the amount available for producing physical changes, and maintaining the physical equilibrium, so that the physical situation would be affected, which is contrary to the hypothesis; and this supposition would imply a rupture of physical continuity no less than the view which makes thoughts links in the chains of nerve-movements. Moreover, since matter belongs, by all its known characteristics, to the physical system, it seems hardly legitimate to describe processes which do not affect the physical system as changes of matter.

More recently Professor Huxley has expressed his views on this subject at length in his interesting lecture "On the Hypothesis that Animals are Automata," published in the *Fortnightly Review* for November, 1874; and the following extracts will show that these later utterances lie open to the preceding criticisms, and to some additional objections:—

'Though we may see reason to disagree with 'Descartes' hypothesis that brutes are unconscious 'machines, it does not follow that he was wrong in 'regarding them as automata. . . . We believe, 'in short, that they are machines, one part of which '(the nervous system) not only sets the rest in motion, 'and co-ordinates its movements in relation with 'changes in surrounding bodies, but is provided with 'special apparatus, the function of which is the calling 'into existence of those states of consciousness which 'are termed sensations, emotions, and ideas.' . . .



‘It is experimentally demonstrable—anyone who cares to run a pin into himself may perform a sufficient demonstration of the fact—that a mode of motion of the nervous system is the immediate antecedent of a state of consciousness. All but the adherents of “Occasionalism,” or of the doctrine of “Preestablished Harmony” (if any such now exist) must admit that we have as much reason for regarding the mode of motion of the nervous system as the cause of the state of consciousness, as we have for regarding any event as the cause of another. How the one phenomenon causes the other we know as much or as little as in any other case of causation. . . . It may be assumed, then, that molecular changes in the brain are the causes of all the states of consciousness of brutes. Is there any evidence that these states of consciousness may, conversely, cause those molecular changes which give rise to muscular motion? I see no such evidence. The frog walks, hops, swims, and goes through his gymnastic performances quite as well without consciousness, and consequently without volition, as with it; and if a frog in his natural state possesses anything corresponding with what we call volition, there is no reason to think that it is anything but a concomitant of the molecular changes in the brain which form part of the series involved in the production of motion.’

‘The consciousness of brutes would appear to be related to the mechanism of their body simply as a collateral product of its working, and to be as completely without any power of modifying that working as the steam-whistle which accompanies the work of a locomotive-engine is without influence upon its machinery. Their volition, if they have any, is an

'emotion indicative of physical changes, not a cause of such changes.'¹

'It is quite true that, to the best of my judgment, the argumentation which applies to brutes holds equally good of men; and therefore, that all states of consciousness in us, as in them, are immediately caused by molecular changes of the brain-substance. It seems to me that in men, as in brutes, there is no proof that any state of consciousness is the cause of change in the motion of the matter of the organism. If these positions are well based, it follows that our mental conditions are simply the symbols in consciousness of the changes which take place automatically in the organism; and that, to take an extreme illustration, the feeling we call volition is not the cause of a voluntary act, but the symbol of that state of the brain which is the immediate cause of that act. We are conscious automata, endowed with freewill in the only intelligible sense of that much-abused term, inasmuch as in many respects we are able to do as we like, but none the less parts of the great series of causes and effects which, in unbroken continuity, composes that which is, and has been, and shall be, the sum of existence.'²

The account given in these passages of the problem before us is beset with difficulties and inconsistencies, which are all the more manifest from the admirable clearness of the language employed. In the first place, the nervous system, which is a material structure changing in strict obedience to the laws of energy, is provided, we are told, 'with special apparatus, the function of which is the calling into existence of states of consciousness.' This function Professor Huxley

¹ Pp. 574-5.

² *Ibid.*, p. 577.


elsewhere explains to be characteristic of nervous matter, just as reflex action and other movements are. Hence these states of consciousness, though not movements themselves, are effects of movements as much as any events are effects of others. They form, then, psychical links in the chains of physical sequents; in other words, they produce ruptures of physical continuity; and while they last, withdraw the energy they employ from the amount available for the physical purposes of the material structure. It need hardly be repeated that such a supposition is untenable. But the passage just quoted seems to suggest that thought is in some obscure way a product of organization without involving a rupture of physical continuity.

For consciousness (that of brutes, and later on that of men) is said to be related to the mechanism of the body 'simply as a collateral product of its working,' and to be 'completely without any power of modifying that working.' And thus the extraordinary conclusion is reached, that while it is demonstrable that molecular changes are the causes of states of consciousness, there is no evidence that 'states of consciousness may, conversely, cause molecular changes.' But how is it possible that consciousness, which uses, like movements, the energy of the body, can be 'simply a 'collateral product of its working,' 'without any 'power of modifying that working?' To learn how, let us examine the comparison by which Professor Huxley illustrates his meaning. He says that consciousness corresponds in this respect to 'the steam-whistle which accompanies the work of a locomotive 'engine,' but 'is without influence upon its machinery.' But does not the whistle of a steam-engine influence its machinery? It is produced by the violent escape of a

certain quantity of steam, and this steam is withdrawn from the amount available to turn the machinery. Therefore the whistle does influence the machinery, as everything must which uses up some of the energy which might else have been employed in driving the engine. The amount so used may be relatively small, but the quantity is of no moment here. It may be replied, that though undoubtedly the whistle withdraws some energy from the steam-engine, the point of the illustration is that that energy is not directed to turn the machinery; and that, similarly, the energy employed in consciousness is not directed to give rise to muscular motion. But to say so, when it is admitted that consciousness employs energy, is to beg the question in dispute. If consciousness employed none, then indeed the assertion would be made out, for consciousness would lack the wherewith to produce molecular changes; but since consciousness, like the steam-whistle, does employ energy, we are deprived of our only valid reason for saying that it yields no measurable results, but is let off like steam escaping into the air. Of emotional excitement that might be said, but it accords ill with our experience when we concentrate our energy for an effort.

And anyhow, even if consciousness does not give rise to those special nerve-movements which set the muscles in motion, it must give rise to some nerve-movements, since it employs nervous energy. At a certain point in the series of these movements, the energy which produces them takes the form of thought (for Professor Huxley asserts again and again that consciousness is a function of nerve-matter in the same sense and to the same extent as nerve-movements are), and then, as affirmed in the last quotation, 'we have

'as much reason for regarding the mode of motion of 'the nervous system as the cause of the state of consciousness, as we have for regarding any event as 'the cause of another.' Unquestionably, but what happens next? The energy which has assumed the form of thought does not continue in that form, nor does it perish. It passes on to reassume the form of nerve-movements, and then, conversely, we have as much reason for regarding the state of consciousness as the cause of its consequent nerve-movement as we have for regarding any event as the cause of another. And yet Professor Huxley, who declares in one sentence 'that all states of consciousness are immediately caused 'by molecular changes of the brain-substance,' declares in the next that 'there is no proof that any state of 'consciousness is the cause of change in the motion 'of the matter of the organism.' These statements amount to the preposterous assertion that states of consciousness are regular effects of physical antecedents, but do not become causes in their turn. If so, these chains of sequents must come to an end with the conscious acts, and the energy employed in them must perish. For if such an act was followed by a physical consequent, we should have as much reason for regarding that conscious act as the cause of change in the organism as we have for regarding any event as the cause of another. Hence it is obvious that there cannot be, in 'the great series of causes and effects which, in 'unbroken continuity, composes the sum of existence,' any mere concomitants, or collateral products 'completely without any power of modifying' its working. Such mere concomitants must be outside the great series altogether, if they exist; and then they are not effects any more than causes, nor are they products of physical



energy. The truth is, that in maintaining, as all experience testifies, that states of consciousness depend on nerve-movements, and asserting at the same time the proposition which seems equally incontrovertible, that thoughts cannot originate nerve-movements, Professor Huxley is contending for inconsistent suppositions, between which no compromise is possible, and lays himself open to the retort of Dr. Carpenter, 'If *neurosis* can give rise to *psychosis*, it is surely quite accordant with the great fundamental principle of interaction to affirm that conversely *psychosis* can give rise to *neurosis*; just as the electricity generated in a voltaic battery by chemical change can itself produce chemical change.'¹ We have seen that if causation takes place in the one direction, it not only *may*, but *must* take place in the other. There are, on the one hand, many grounds for believing that nerve-changes are the causes of states of consciousness; but if so, assuredly states of consciousness become in their turn the immediate antecedents, or causes of nerve-changes. On the other hand, it violates every analogy to suppose that thoughts give rise to movements; but if they do not, then neither can thoughts be the effects of movements, nor the products of physical energy. Professor Huxley adopts both these inconsistent alternatives, and rejects the necessary inferences from both.

§ 8. DR. BÜCHNER'S EXPLANATION OF THE RELATION OF THOUGHT TO MATERIAL ORGANISM.

It will further illustrate the impossibility of regarding thought as a product of organisation not involving a

¹ "On the Doctrine of Human Automatism," *Contemporary Review*, Feb., 1875, p. 416.

rupture of physical continuity, to examine the comparison which a far inferior writer draws between a steam-engine and the brain:—

‘Thought, spirit, soul, are not material, not a substance, but the effect of the conjoined action of many materials endowed with forces or qualities. . . . The steam-engine is, in a certain sense, endowed with life, and produces, as the result of a peculiar combination of force-endowed materials, a united effect, which we use for our purposes, without, however, being able to see, smell, or touch the effect itself. The steam expelled by the engine is a secondary thing; it has nothing to do with the object of the machine, and may be seen and felt as matter. Now, in the same manner as the steam-engine produces motion, so does the organic complication of force-endowed materials produce in the animal body a sum of effects, so interwoven as to become a unit, and is then by us called spirit, soul, thought. The sum of these effects is nothing material; it can be perceived by our senses as little as any other simple force, such as magnetism, electricity, &c., merely by its manifestations.’¹

The effect of the action of the brain is likened in this passage to the effect of the action of the steam-engine. The steam-engine, like the brain, is said to produce, ‘as the result of a peculiar combination of force-endowed materials,’ a united effect which we are unable to see, smell, or touch. Dr. Büchner tells us in the next sentence but one that this effect is *motion*, which obviously is the only kind of effect obtained from the steam-engine, except the material waste.

¹ *Force and Matter*, pp. 135-36; a Translation of “*Kraft und Stoff*,” by Dr. Büchner.

- . But though we may concede to Dr. Büchner that we cannot apprehend motion by smell, we certainly can do so by sight and by touch. And motion is the universal and characteristic function of matter, the form of energy which every material structure receives, and employs, and imparts. The steam-engine in operation is a combination of materials in motion, and motion is the natural and only effect which it produces. It draws energy of motion from the boiling water, and yields exactly what it draws; nor could any complication of its machinery make it yield anything else.

Therefore the steam-engine affords no illustration of the action of the brain in thought; for there the very difficulty is, that though equally a material structure, the brain, and the brain only, produces, besides *movements*, which are natural to such a structure, effects which are not movements, and seem wholly incommensurable with movements. This comparison, and those of the steam-whistle and of the electric battery, lately quoted from Professor Huxley, and that of the horse and his rider, used by Dr. Carpenter, and all comparisons to bodies which direct or generate motion in the ordinary ways, miss the very problem they are employed to clear up. And the air of mystery which attaches to expressions like—‘The organic complication of force-endowed materials produces a sum of effects, so interwoven as to become a unit, and is then by us called spirit, soul, thought’—is simply misleading if it is meant to suggest that out of a combination of materials and movements, if only it be extremely intricate, something which is different from either might naturally arise. It is obvious that no mere multiplication of materials and movements can yield anything else

but materials and movements. Let the steam-engine bear witness, and the watch, and the entire vegetable world, and the whole material universe, excepting only the nervous systems of animals, which are in question.

So far as the comparison of the steam-engine goes, Dr. Büchner employs motion only to illustrate thought; but the last sentence quoted suggests an analogy between thought and occult energies, such as magnetism and electricity. The sentence is inconsistent with itself, indeed, for the earlier clause describes thought as an effect or manifestation produced by motions of matter; but the later clause implies that it is an occult force, perceptible only by its manifestations, as electricity and magnetism are—their manifestations being simply motions. That is to say, a division is implied between forces and their manifestations; and in one clause thought is ranked as a manifestation, and in the other as an occult force. Obviously thought is an effect or manifestation, and not the hidden cause of one (whatever may be said of spirit and soul); and on this account it is compared by Professor Huxley, and by Dr. Büchner himself, to motion, as being, like that, a function of matter. But if so, no help is gained from the reference to magnetism and electricity, which, *as effects*, are simply motions. Dr. Büchner protests, indeed, that these comparisons are ‘not intended to ‘prove anything beyond affording a slight hint as to ‘the possibility of the production of the soul from ‘material combinations’ (p. 132). What they really prove is the impossibility of establishing his thesis, that ‘mental function is a peculiar manifestation of vital power’ (p. 125).

§ 9. IS THERE ANY CAUSAL CONNECTION BETWEEN
PHYSICAL AND MENTAL FACTS.

It has appeared that the simplest supposition respecting the relation between nerve-movements and acts of consciousness, namely, that they are links of different kinds in the same chains of sequents, is untenable. We have seen that Dr. Carpenter and Professor Huxley, some passages of whose writings support that view explicitly or implicitly, endeavour in others to get rid of its inadmissible feature, that chains of nerve-movements are broken by the interposition of thoughts, by supposing that acts of consciousness are simply concomitants of nerve-movements, collateral products of the working of the material mechanism, as Professor Huxley expresses it, but 'completely without any power of modifying that working.' Undoubtedly the use of the word *concomitant* instead of *consequent* to describe the conscious act in its time-relation to its correspondent nerve-change implies an important variation of meaning. For it suggests the removal of thoughts from impossible positions in between physical sequents, and so leaves the chains of these as strictly continuous when consciousness arises as when it is absent. But this will happen only if the mental concomitants stand completely outside the series of physical causes and effects, and are entirely independent of the physical energy which operates in them. For if consciousness is effected at the expense of that energy, in the first place, the physical sequents cannot proceed as they would have done without it, inasmuch as some of the energy that would have been available for them has been temporarily withdrawn. Again, the mental act, if a product of physical energy, cannot be a con-

comitant of nerve-changes in the sense of not being a link in the chains of physical sequents; for the energy it employs must be derived from some *antecedent* nerve-change, and must pass on to another *consequent* nerve-change, while, *during* the mental act, its energy cannot be otherwise employed. The act, therefore, must stand *among* the physical 'sequents. Hence Professor Huxley, who maintains that we have as much reason for regarding nerve-changes as the causes of states of consciousness as we have for regarding any event as the cause of another, thereby disqualifies himself from representing mental acts as mere concomitants of nerve-changes, without any influence over them.

No doubt an act which is a *concomitant* of one physical change will be, *chronologically*, the *consequent* of its predecessor, and we know of no tie but that of time between causes and effects. But the question here is, with which physical act is the mental act unconditionally associated? With one that *precedes* or that *accompanies* it? If *causally* associated with its physical *antecedent*, that antecedent has not a regular¹ physical consequent, nor has the mental act a concomitant in the sense intended. On the other hand, if the mental act is associated with a strictly *concomitant* physical act, its *causal association* with a physical antecedent is abandoned, and the physical chain is supposed to proceed as if the mental act did not take place. And it is precisely in order that the physical chain may so proceed, that the supposition of a merely concomitant mental act is resorted to by Professor Huxley, who yet insists also that its physical *antecedent* is strictly its cause.

¹ Because the physical consequent could only represent a part of the energy operating in the physical antecedent.—Ed.

It is clear that if mental acts are the true concomitants of nerve-changes, they stand completely outside the series of physical processes, and are not causally associated with physical antecedents. This more consistent view is suggested in passages already quoted from Dr. Tyndall and Professor Bain, and has been expressed by Professor Clifford, who writes :—

‘The two things are on two utterly different platforms—the physical facts go along by themselves, and the mental facts go along by themselves. There is a parallelism between them, but there is no interference of one with the other. . . . The mind, then, is to be regarded as a stream of feelings, which runs parallel to and simultaneous with a certain part of the action of the body.’¹

This is a clear account of the problem, and escapes the particular difficulties just considered; but, as expressed in these words, it amounts in all essential respects to the celebrated scheme of ‘Preestablished Harmony,’ advocated by Leibnitz, and thus briefly described by Mr. Lewes:—

‘The human mind and the human body are two independent but corresponding machines. They are so adjusted that they are like two unconnected clocks constructed so as that at the same instant one should *strike* the hour and the other *point* it.’²

The theory of ‘occasional causes’ originated by Descartes is essentially similar :—

‘The brain does not act immediately and really upon the soul; the soul has no direct cognizance of any modification of the brain: this is impossible. It is God himself who, by a law which He has established,

¹ “Body and Mind,” pp. 728-29, *Fortnightly Review*, December, 1874.

² *History of Philosophy*, art. “Leibnitz.”

‘when movements are determined in the brain, produces analogous modifications in the conscious mind. In like manner, suppose the mind has a volition to move the arm, this volition is, of itself, inefficacious; but God, in virtue of the same law, causes the answering motion in our limb. The body is not, therefore, the real cause of the mental modifications, nor the mind the real cause of the bodily movements. . . . The organic changes and the mental determinations are nothing but simple conditions, and not real causes; in short, they are occasions, or occasional causes.’¹

These great thinkers of two centuries ago showed a remarkable insight into the problem before us in attributing to the two series of facts in question the same independence or parallelism which is ascribed to them by the latest modern researches. The positive theories they advocated cannot, of course, be accepted now; but if we inquire of our modern authorities what relation these parallel sets of processes sustain to each other, we shall find them unprovided with any satisfactory solution.

§ 10. WHENCE DO CONSCIOUS ACTS ORIGINATE?

The conclusion being reached that conscious acts run parallel to and simultaneous with certain trains of nerve-changes, which, however, proceed as if they were not there, so that the conscious acts are not separate effects of nerve-changes, and do not use up physical energy, the question arises,—of what, then, are conscious acts the effects, and at the expense of what

¹ Laromiguière, *Leçons de Philosophie*, tom. ii., pp. 255-56. Translated and quoted by Sir W. Hamilton; *Lectures on Metaphysics*, vol. i., pp 301-2.

energy are they produced ? The answer to this question depends on the answer to another—Do the mental acts, like the physical acts, strictly '*go along by themselves*,' to use Professor Clifford's phrase ; or is each mental act so far associated with a synchronous physical act as to occur when it occurs, and not otherwise ? If the former, then mind and body are indeed like unconnected clocks, and their correspondence is a veritable '*Preestablished Harmony*,' and, of course, a distinct fund of mental energy must be required to accomplish the mental work. But this view would find no serious upholders now. The passage quoted from Professor Clifford unquestionably suggests it, but he proceeds to advocate the other alternative, and becomes involved in its difficulties.

On the other alternative, each mental act occurs only when its synchronous nerve-change occurs, which nerve-change is, therefore, at least one of its indispensable conditions. But the series of nerve-changes is, on the hypothesis, physically unaffected by the parallel series of mental acts. The whole causal power, then, of each physical change operates to produce its *physical* effect, leaving none to call a mental act into existence. Whence then does it originate ? The slightest withdrawal of physical energy to effect it would alter the physical situation, which is contrary to the hypothesis ; yet how can a physical act produce any effect without some expenditure of force ? And, on the other hand, since conscious acts are only occasional concomitants of nerve-changes, whence do they originate, if not from nervous energy ? To suppose isolated acts of consciousness arising now and again, parallel with nerve changes which contribute nothing to produce them, though indispensable to their occurrence, is to suppose

creations out of nothing whenever they happen. Professor Clifford meets this difficulty by supposing that, if not consciousness, some rudimentary form of it, is a universal characteristic of matter in motion, which, in peculiar organisms of great complexity, appears as mind. He writes :—

‘The only thing that we can come to, if we accept the doctrine of evolution at all, is that, even in the very lowest organisms, even in the amoeba which swims about in our own blood, there is something or other inconceivably simple to us, which is of the same nature with our own consciousness, although not of the same complexity—that is to say (for we cannot stop at organic matter, knowing as we do that it must have arisen by continuous physical processes out of inorganic matter), we are obliged to assume, in order to save continuity in our belief, that along with every motion of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves.’¹

An idea somewhat similar seems suggested by Professor Tyndall, in his address as President of the British Association in 1874, where these words occur :—

‘Trace the line of life backwards, and see it approaching more and more to what we call the purely physical condition. We reach at length those organisms which I have compared to drops of oil suspended in a mixture of alcohol and water. We reach the *Protogenes* of Hæckel, in which we have “a type distinguishable from a fragment of albumen only by its finely granular character.” Can we pause here? We break a magnet, and find two poles in each of its fragments. We continue the process of

and
3.11-2.¹ “Body and Mind,” p. 731, *Contemporary Review*, Dec., 1874.

‘breaking, but however small the parts, each carries
 ‘with it, though enfeebled, the polarity of the whole.
 ‘And when we can break no longer, we prolong the
 ‘intellectual vision to the polar molecules. Are we
 ‘not urged to do *something* similar in the case of life?
 ‘. . . The confession that I feel bound to make
 ‘before you is, that I prolong the vision backward
 ‘across the boundary of the experimental evidence, and
 ‘discern in that matter, which we in our ignorance,
 ‘notwithstanding our professed reverence for its
 ‘Creator, have hitherto covered with opprobrium, the
 ‘promise and potency of every form and quality of
 ‘life.’

There is a resemblance between these suggestions and the views taken of the problem by Mr. Herbert Spencer and Mr. Bain, but these last have distinctive features, and had better be considered separately.

To compare, in the first place, the statements already quoted from Professor Clifford’s paper on “Body and Mind,” there is a decided inconsistency between them. In one passage we are told :—

‘The physical facts go along by themselves, and the
 ‘mental facts go along by themselves. There is a
 ‘parallelism between them, but there is no interference
 ‘of one with the other.’¹

A passage on the preceding page is equally clear and strong :—

‘All the evidence that we have goes to show that
 ‘the physical world gets along entirely by itself,
 ‘according to practically universal rules. That is to
 ‘say, the laws which hold good in the physical world
 ‘hold good everywhere in it; they hold good with
 ‘practical universality, and there is no reason to

¹ *Fortnightly Review*, Dec., 1874, p. 728.

'suppose anything else but those laws in order to account for any physical fact ; there is no reason to suppose anything but the universal laws of mechanics in order to account for the motion of organic bodies. The train of physical facts between the stimulus sent into the eye, or to any one of our senses, and the exertion which follows it, and the train of physical facts which goes on in the brain, even when there is no stimulus and no exertion, these are perfectly complete physical trains, and every step is fully accounted for by mechanical conditions.'

Whereas, on page 731, we learn, from a passage formerly quoted :—

'We are obliged to assume, in order to save continuity in our belief, that along with every motion of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves.'

But if so, then the mental facts do not, as described above, 'go along by themselves,' but each one 'goes along with' a motion of matter. In other words, the mental series *depends* altogether on the physical series, and this involves interference, or, at least, interaction of the closest and most constant kind. If a quasi-mental act goes along with every motion of matter, occurring when that occurs, and not otherwise, then the mental act does not depend on a preceding mental act, but on a concomitant physical one ; and the mental acts, so far from going 'along by themselves,' have no connection with each other, but are like beads strung on a thread of physical sequences. The beads seem to form a chain, but in fact they have no union apart from the thread. If, then, the mental series goes along by itself, mental acts cannot be, as


represented, appendages of motions of matter, and dependent on their occurrence, but they must be derived from a second and independent fund of energy, and their correspondence with the parallel physical series must be a pre-established harmony. On the other hand, if a quasi-mental act goes along with every motion of matter, the two sets of processes do not proceed independently, without interfering with each other ; and it is difficult to see how, with such a remarkable assumption respecting each motion of matter, there can be 'perfectly complete physical trains, every step fully accounted for by mechanical conditions.' If it be so, conditions far other than mechanical are everywhere in operation in the material universe, though only these are manifested, and the so-called physical energy must be continually expended in quasi-mental acts as well as in movements, a supposition which we have seen is inadmissible if regarded as an occasional occurrence, and which it is proposed to call a universal attribute of matter in motion only to make the hypothesis tolerable. But the evidence should be very strong to justify us in ascribing to every motion of matter an accompanying mental, or quasi-mental act, which no observation or experiment has ever shown to take place, and which no effort of imagination enables us to associate with it. And what is the evidence? Positive evidence there is none. But here and there, at points in certain elaborate nervous organisms, mental acts are (as we shall see) *presumed* to occur, which can be accounted for only by supposing some inscrutable alliance between them and motions of matter ; and simply in order to divest these particular motions of matter of an exceptional character (or, as Professor Clifford expresses it, 'to save continuity

in our belief,') the inconceivability is multiplied to infinity and proclaimed universal.

But again, of consciousness as such it is true that its *esse* is *percipi*—a feeling unfelt is a nonentity. Professor Clifford, however, would hardly ascribe actual consciousness to this 'something or other, inconceivably simple to us;' which, in every movement, 'corresponds to the mental fact in ourselves;' especially since we know that a considerable amount of nerve-change is necessary in us to give rise to an appreciable feeling. There are light-waves too faint or too few to produce the *minimum visibile*, and there are vibrations of sound too slight to be heard. How much less can we regard these acts of 'inconceivable simplicity' as in any degree sensations. But if so, then they are not, speaking strictly, 'of the same nature with our own consciousness,' for they are not conscious. So that we have invented a purely imaginary something to give rise, when of a certain complexity, to consciousness, but which, in its simple forms, is no more conscious than a movement of matter itself. If any complex aggregate of unconscious acts can produce a conscious act, we had better ascribe this property to the nerve-changes which do take place, than invent imaginary processes equally unconscious.

And it would not be easy to trace out in detail this unsupported hypothesis, if it were granted. For every movement of matter occupies a certain space, and a certain time. And an aggregate of movements must be either simultaneous, or successive, or partly one and partly the other. If simultaneous, the aggregate of movements will occupy a portion of space equal to the sum of the portions required by each. If successive, the series of movements will require a period of time

equal to the sum of the periods occupied by each. If the aggregate of movements was partly simultaneous and partly successive, corresponding portions of space and time would be required. If, then, consciousness arises from the aggregation of extremely simple quasi-mental acts, one of which accompanies each movement of matter, this aggregation of quasi-mental acts must require a corresponding aggregation of movements of matter, occupying, as we have seen, added increments of time, or of space, or of both. In the one case, a unit of consciousness will require for its production a period of time equal to the sum of the several periods occupied by the movements accompanying the quasi-mental acts which compose it. But the earlier of these periods will have elapsed, and the processes which took place in them will have ceased and be no more, before the later periods and processes begin. Hence, on this view, *past* acts would be component parts of every *present* feeling, processes no longer in existence would be actual constituents of each now existing minimum of consciousness; which is absurd. The acts in question, then, cannot be *successive*. And if they are *simultaneous*, we have to suppose a single unit of consciousness spread over the whole portion of space covered by the several movements which accompany the requisite number of quasi-mental acts. But how could the co-existence of any number of adjacent, unconscious acts constitute, or produce, a conscious act? They lie side by side, but they occupy, or their concomitant movements do, distinct portions of space. How could they, or any two of them, be so brought together, and fused into unity, as to give rise to consciousness when in connection, though destitute of consciousness when separate?



And another question rises: Do these quasi-mental and unconscious acts, when thus aggregated, *themselves constitute* the act of consciousness, or *produce it as something different from themselves*? If the latter, the old difficulty returns as to the derivation of the energy which effects this new product. For the quasi-mental act accompanying every movement of matter must be presumed to be a regular product of physical energy; but no mere aggregation of these could produce an *additional* something different from themselves. If, to take the other supposition, a unit of feeling is made up of an aggregate of quasi-mental acts, it is a highly composite operation. If we suppose a unit of feeling divided, no consciousness would remain, half a unit of feeling would not consist of feeling; but, on the present supposition, there would remain as its constituents, an assemblage of simultaneous, quasi-mental, but unconscious acts. Now, place this requisite number of molecules side by side, and let them traverse together the necessary portions of space, and the accompanying quasi-mental acts will merge their distinct and unconscious existence in the character of a single conscious act. That seems to be the extraordinary supposition which we are invited to entertain 'in order to save continuity in our belief;' 'the only thing that we can come to, if we accept the doctrine of evolution at all.'

If, to escape these difficulties, the inconceivably simple mental something which goes along with every motion of matter be regarded as itself the unit of feeling, that is, as itself conscious to an infinitesimal extent, new difficulties present themselves, and the old ones are by no means wholly removed. For if a rudimentary consciousness accompanies every motion of matter, ^{to} and when the motions are complicated, their conscious

concomitants accumulate so as to produce sensibility and intelligence, how is it that these results, or some approaches to them, are not produced on every side, since on every side movements of the most complicated kind are taking place? That ought certainly to happen if co-existing mental acts accumulate their processes as their accompanying movements do when simultaneous and adjacent. Other parts of the animal body, for example, at least approach the nervous system in elaborateness of composition and variety of change. Vegetable organisms show extreme complexity. And even in the inorganic world, there are systems of molecular movement such as must produce no slight accumulations of the conscious element, if a unit of feeling accompanies each unit of motion, and combines with adjacent units. At least, every ganglion of the nervous organism, being similar in kind, if not equal in degree, of composition to those of the brain, should generate feelings of corresponding complexity and development. But we have seen that though ganglia are distributed over the nervous system,—not to mention the innumerable fibres it contains,—there is evidence that consciousness arises only at certain points in the brain. There seems nothing for it but to assume once more, and still ‘in order to save continuity in our belief,’ that proportionate developments of consciousness do exist in all these cases, though there is no evidence of their existence,—that in muscle and in blood as well as in nerve, in vegetable tissues, and wherever in the universe varied and active movements take place, complex systems of feeling go side by side with complex systems of motion.

And the difficulties before mentioned are by no means altogether removed if we attribute rudimentary

consciousness to the quasi-mental concomitant of each movement. The same objection would lie against supposing a developed consciousness made up of *successive* units; namely, that the earlier minima would be over before the later began; even if there were but two minima, the first would be over before the second began. While if, on the other hand, a developed consciousness be supposed to be made up of *simultaneous* minima of feeling, accompanying simultaneous movements, it is difficult to see how any number of rudimentary feelings occurring side by side (for at least no two particles of matter could move through the same space at the same time) could be combined into one elaborate sensation. And again, though the combination of rudimentary feelings, if it did take place, might conceivably produce an intensity of feeling proportioned to the number of combined feelings, it is difficult to see how any mere accumulation of such simple elements could amount to the higher operations of intelligence. But this point will receive further consideration in discussing Mr. Herbert Spencer's view of the problem before us.

§ 11. PROFESSOR BAIN'S ACCOUNT OF THE PROBLEM.

The account which Professor Bain gives of the problem in his little book entitled *Mind and Body*, resembles in essential respects the view of Mr. Herbert Spencer, and is so far similar to some of the views already considered, as to be open to several of the objections which have been urged against them. Professor Bain teaches that 'there is, in company with all 'our mental processes, *an unbroken material succession*. 'From the ingress of a sensation to the outgoing re-

'sponses in action the mental succession is not for an
 'instant dissevered from a physical succession. A new
 'prospect bursts upon the view; there is a mental
 'result of sensation, emotion, thought, terminating in
 'outward display of speech or gesture. Parallel to
 'this mental series is the physical series of facts, the
 'successive agitation of the physical organs, called the
 'eye, the retina, the optic nerve, optic centres, cerebral
 'hemispheres, outgoing nerves, muscles, &c. . . .
 'It would be incompatible with everything we know
 'of the cerebral action, to suppose that the physical
 'chain ends abruptly in a physical void, occupied
 'by an immaterial substance; which immaterial sub-
 'stance, after working alone, imparts its results to the
 'other edge of the physical break, and determines the
 'active response—two shores of the material with
 'an intervening ocean of the immaterial. There
 'is, in fact, no rupture of nervous continuity. The
 'only tenable supposition is, that mental and physical
 'proceed together as undivided twins. When, there-
 'fore, we speak of a mental cause, a mental agency,
 'we have always a *two-sided cause*; the effect pro-
 'duced is not the effect of mind alone, but of mind in
 'company with body. That mind should have ope-
 'rated on the body is as much as to say that a two-
 'sided phenomenon, one side being bodily, can influ-
 'ence the body; it is, after all, body acting upon body.
 'When a shock of fear paralyses digestion, it is not the
 'emotion of fear, in the abstract, or as a pure mental
 'existence, that does the harm; it is the emotion in
 'company with a peculiarly excited condition of the
 'brain and nervous system; and it is this condition of
 'the brain that deranges the stomach. . . . The
 'line of mental sequence is thus, not mind causing

‘body, and body causing mind, but mind-body giving birth to mind-body; a much more intelligible position. For this double or conjoint causation we can produce evidence; for the single-handed causation we have no evidence.’¹

Again,—

‘If all mental facts are at the same time physical facts, some will ask, what is the meaning of a proper mental fact? Is there any difference at all between mental agents and physical agents? There is a very broad difference, which may be easily illustrated. When any one is pleased, stimulated, cheered, by food, wine, or bracing air, we call the influence physical; it operates on the viscera, and through these upon the nerves, by a chain of sequence purely physical. When one is cheered by good news, by a pleasing spectacle, or by a stroke of success, the influence is mental; sensation, thought, and consciousness are part of the chain; although these cannot be sustained without their physical basis. The proper physical fact is a single, one-sided, objective fact; the mental fact is a two-sided fact, one of its sides being a train of feelings, thoughts, or other subjective elements. We do not fully represent the mental fact, unless we take account of both the sides. The so-called mental influences, cheerful news, a fine poem, and the rest, cannot operate, except on a frame physically prepared to respond to the stimulation.’²

These passages represent the train of physical changes as unbroken by the occurrence of mental acts; they teach that the material succession takes place just as it would have done without consciousness. And respecting the connection between the mental act and its

¹ *Mind and Body*, pp. 130-32.

² *Ibid*, pp. 133-34.

concomitant nerve-change, Professor Bain, like Mr. Herbert Spencer, seems here to advocate a more intimate union of the two than we have hitherto considered. For the mental series does not, in his view, 'go along by itself,' in pre-established harmony with the physical series; nor is his supposition precisely that of Professor Clifford, that each mental fact 'goes along with' a motion of matter, for, though it is not fair to press these mere suggestions too closely, that expression seems to imply that the mental act is something additional to, and distinct from the physical change. But, according to Professor Bain, when mental acts take place, we have 'a two-sided phenomenon, one side being bodily,' and its operations are those of a 'two-sided cause.' It is difficult to understand the exact meaning of these expressions, as of Mr. Herbert Spencer's corresponding phrase, 'one fact with two faces,' which receives consideration below; but the use of the singular in describing this two-sided fact seems to signify that they, or it, are meant to be counted, and therefore to be conceived as *one*, which bespeaks an essential union of the two hardly to be distinguished from identity.

The view under consideration differs from that of Professor Clifford in another particular, which lays it open to a serious objection. We are told, in language already quoted,—

'When any one is pleased, stimulated, cheered, by food, wine, or bracing air, we call the influence physical; it operates on the viscera, and through these upon the nerves, by a chain of sequence purely physical. When one is cheered by good news, by a pleasing spectacle, or by a stroke of success, the influence is mental; sensation, thought, and consciousness are

'part of the chain; although these cannot be sustained without their physical basis. The proper physical fact is a single, one-sided, objective fact; the mental fact is a two-sided fact, one of its sides being a train of feelings, thoughts, or other subjective elements.'¹

Except, then, in certain points of certain nervous organisms, the physical series are made up of single, one-sided, objective facts; but where consciousness occurs, the series, the same series, becomes, on the view before us, double, or rather, two-sided, one of its sides being a train of feelings, and the other the physical basis which sustains the feelings. Now, postponing for the present an examination of that very ambiguous phenomenon, a two-sided fact, consider conscious acts as being only occasional concomitants of nerve-changes, according to the supposition in question. If they occur only sometimes, if the chain of single physical facts suddenly becomes two-sided, and shortly becomes single again, what power calls into being the mental fact, or rather, the mental side of the now two-fold fact? It cannot be the physical energy of the organism, for if the mental fact were one of its operations, it would stand in the series of its other operations, would have a physical cause and a physical effect, and so produce rupture of physical continuity, which is contrary to the hypothesis. For it has been shown before that any withdrawal of physical energy to effect operations other than physical, must alter the physical situation, in other words, rupture physical continuity. And though, under cover of the singular number employed here, it may be denied that any additional act takes place, yet when a single, one-sided physical fact becomes two-sided, one of its sides bearing the entirely novel character of a feel-

¹ *Mind and Body*, pp. 133-34.

ing, a something additional does arise, at least a change does take place, which, if physical continuity is to be maintained, cannot be a product of physical energy, nor yet a creation out of nothing. Nor can the mental act be effected by assuming a distinct fund of mental energy, which would make the two sets of processes independent, and correspondent only by preestablished harmony, whereas the hypothesis before us supposes a union of the two so intimate that they are called one fact rather than two.

Professor Clifford's hypothesis, though, as we have seen, untenable on other grounds, provides against this difficulty of accounting for the origin of a new phenomenon by assuming 'that along with every motion 'of matter there is some fact which corresponds to the 'mental fact in ourselves.'¹

It may be urged, however, that if physical energy is not competent to produce mental or quasi-mental acts occasionally, it cannot produce them always, as Professor Clifford's hypothesis supposes. And, indeed, it may well be objected to that hypothesis, that in ascribing a quasi-mental concomitant to every motion of matter, a function is attributed to physical energy which seems to us quite incommensurable with its invariable function of motion, and which presents itself to us only very occasionally though assumed to be universal. But as physical energy is, like all power, entirely occult, anything may be predicated of it, since nothing can be denied; and if some quasi-mental activity be an invariable concomitant of its physical operations, no new phenomenon arises, whose origin requires explanation, when exceedingly complex movements are accompanied

¹ "Body and Mind," *Fortnightly Review*, December, 1874, p. 731.

by correspondingly complex mental acts, amounting to consciousness.

§ 12. MR. HERBERT SPENCER'S VIEWS.

The hypothesis before us, which teaches, it will be remembered, that nerve-movements and states of consciousness form parallel series of changes, inseparable in fact, though refusing to be identified in thought, has received very full exposition at the hands of Mr. Herbert Spencer, whose account of it will give us the best opportunity of judging the hypothesis as a whole. Hitherto we have considered mainly special features of it peculiar to certain writers, and open, it has appeared, to decisive objections. Is Mr. Spencer's statement of it less open to objections? Is any form of the hypothesis consistent with facts? We proceed to the discussion of these questions.

As held by Mr. Spencer, the hypothesis has, indeed, some features, the consideration of which must be postponed. For he describes the allied physical and mental processes as 'subjective and objective faces of the same fact,' and in other words, as 'manifestations of an ultimate reality in which both are united.' Now, those expressions carry us behind phenomena, and beyond the world of Realism, and bring us, at least, to the verge of the *terra incognita* of 'things in themselves.' But at present we are dealing simply with the facts of Realism, as carried to their legitimate issues in the conclusions of science.

In the views already examined, the processes in question have been regarded solely as Realism presents them, that is, as actual objective operations; and it will conduce to clearness to consider Mr. Spencer's account,

in the first instance, from the same point of view, which, indeed, he himself adopts and defends after a lengthened discussion of the relation of phenomena to the ultimate realities of philosophy. Into that arduous region we shall have to follow him, and inquire whether the hypothesis before us agrees with his philosophy; but at present let us regard it from the point of view of Realism, which Mr. Spencer justifies himself in occupying when he draws the following inference from his metaphysical reasoning:—

‘Thus, then, we may resume, with entire confidence, ‘those realistic conceptions which philosophy at first ‘sight seems to dissipate.’¹

This statement is made subject only to the qualification, that the conclusions reached are to be understood as ‘relative realities, and not absolute ones.’

Mr. Spencer sums up as follows an elaborate account of the correspondences between feelings and nervous changes:—

‘We have seen that the several circumstances which ‘facilitate or hinder nervous action are also circumstances which facilitate or hinder feeling. We have ‘seen that as nervous action occupies appreciable time, ‘so feeling occupies appreciable time. We have seen ‘that each feeling leaves a partial incapacity for a like ‘feeling, as each nervous action leaves a partial incapacity for a like nervous action. We have seen that, ‘other things equal, the intensities of feelings vary as ‘the intensities of the correlative nervous actions. We ‘have seen that the difference between direct and indirect nervous disturbances corresponds to the difference between the vivid feelings we call real and the ‘faint feelings we call ideal. And we have seen that

¹ *First Principles*, p. 161.

'certain more special objective phenomena which
'nervous actions present, have answering subjective
'phenomena in the forms of feeling we distinguish as
'desires. Thus, impossible as it is to get immediate
'proof that feeling and nervous action are the inner and
'outer faces of the same change, yet the hypothesis
'that they are so harmonizes with all the observed
'facts.'¹

Another example of the parallelism between nervous action and feeling may be drawn from the fact that causes and effects are connected in our experience by the tie of succession alone. For since nerve-currents consist, as we have seen, of series of waves, if feelings are concomitants of nerve-waves, they must come in succession, as nerve-waves do ; and the external changes we suppose to be indicated by the feelings must also appear to us as successive facts. In no other way can they be presented to us, and hence we cannot apprehend any other nexus than succession between them, though the real relations of the facts may be different. We are indeed conscious also of simultaneous facts ; but Mr. Herbert Spencer maintains with reason² that we apprehend facts as co-existent when the order in which they present themselves to us in consciousness is reversible at will, without diminution in the vividness of the conscious states. Thus our inability to discover any nexus between causes and effects except that of sequence, accords with the circumstance that they are presented to us only as states of consciousness which reach us as concomitants of successive nerve-waves.

Mr. Spencer conceives that the parallelism between feeling and nerve-action holds much farther, and may

¹ *Principles of Psychology*, vol. I., sec. 51.

² *Ibid.*, vol. II., chap. 25.

be traced in the simple elements out of which, he maintains, our ordinary sensations and emotions and their corresponding nerve-changes are built up. In the following interesting passage he states the grounds of this opinion :—

‘Although,’ he writes, ‘the individual sensations and emotions, real or ideal, of which consciousness is built up, appear to be severally simple, homogeneous, unanalysable, or of inscrutable natures, yet they are not so. There is at least one kind of feeling which, as ordinarily experienced, seems elementary that is demonstrably not elementary. . . . Musical sound is the name we give to this seemingly simple feeling which is clearly resolvable into simpler feelings. Well-known experiments prove that when equal blows or taps are made one after another at a rate not exceeding some sixteen per second, the effect of each is perceived as a separate noise ; but when the rapidity with which the blows follow one another exceeds this, the noises are no longer identified in separate states of consciousness, and there arises in place of them a continuous state of consciousness, called a tone. On further increasing the rapidity of the blows, the tone undergoes the change of quality distinguished as a rise in pitch ; and it continues to rise in pitch as the blows continue to rise in rapidity, until it reaches an acuteness beyond which it is no longer appreciable as a tone. So that out of units of feeling of the same kind, many feelings distinguishable from one another in quality result, according as the units are more or less integrated. This is not all. The inquiries of Professor Helmholtz have shown that when, along with one series of these rapidly-recurring noises, there is generated another series in which the noises are more rapid though not

‘so loud, the effect is a change in that quality of the tone known as its *timbre*. . . .

‘Can we stop short here? If the different sensations known as sounds are built out of a common unit, is it not to be rationally inferred that so likewise are the different sensations known as tastes, and the different sensations known as odours, and the different sensations known as colours? Nay, shall we not regard it as probable that there is a unit common to all these strongly-contrasted classes of sensations? If the unlikenesses among the sensations of each class may be due to unlikenesses among the modes of aggregation of a unit of consciousness common to them all; so, too, may the much greater unlikenesses between the sensations of each class and those of other classes. There may be a single primordial element of consciousness, and the countless kinds of consciousness may be produced by the compounding of this element with itself, and the re-compounding of its compounds with one another in higher and higher degrees: so producing increased multiplicity, variety, and complexity.

‘Have we any clue to this primordial element? I think we have. . . . The subjective effect produced by a crack or noise that has no appreciable duration, is little else than a nervous shock. Though we distinguish such a nervous shock as belonging to what we call sound, yet it does not differ very much from nervous shocks of other kinds. An electric discharge sent through the body, causes a feeling akin to that which a sudden loud report causes. A strong unexpected impression made through the eyes, as by a flash of lightning, similarly gives rise to a start or shock. . . . The fact that sudden brief disturbances

‘thus set up by different stimuli through different sets
‘of nerves, cause feelings scarcely distinguishable in
‘quality, will not appear strange when we recollect
‘that distinguishableness of feeling implies appreci-
‘able duration. . . . If the state does not last long
‘enough to admit of its being contemplated, it cannot
‘be classed as of this or that kind, and becomes a
‘momentary modification very similar to momentary
‘modifications otherwise caused. . . . The nervous
‘shocks recognized as such are violent. . . . But
‘the rapidly-recurring nervous shocks of which the
‘different forms of feeling consist, . . . we must
‘think of rather as successive faint pulses of subjective
‘change, each having the same quality as the strong
‘pulse of subjective change, distinguished as a nervous
‘shock.

‘The reader will at once see, if he has not already
‘seen, the complete congruity between this view and the
‘known character of nerve action. . . . Experiments
‘show that the so-called nerve current is intermittent—
‘consists of waves which follow one another from the
‘place where the disturbance arises to the place where
‘its effect is felt. The external stimulus in no case acts
‘continuously on the sentient centre, but sends to it a
‘series of pulses of molecular motion. Hence, in con-
‘cluding that the subjective effect or feeling is composed
‘of rapidly-recurring mental shocks, we simply conclude
‘that it corresponds with the objective cause—the
‘rapidly-recurring shocks of molecular change. Our
‘typical case of musical sound well exhibits the agree-
‘ment. We have a single aërial wave, a single
‘movement of the drum of the ear, a single impact on
‘the expansion of the auditory nerve, a single wave
‘propagated to the auditory centre, and a single shock of

'feeling known as a crack or a report; and then, when
'there is externally generated a succession of such aërial
'waves, each working its individual physical effect on
'the auditory structures, and its individual psychical
'effects as a kind of shock; we see that if the recurrent
'physical effects exceed a certain speed, the recurrent
'psychical effects are consolidated into a sensation of
'tone. So that here the nerve pulses and the pulses of
'feeling clearly answer to one another; and it can
'scarcely be doubted that they do so throughout.'¹

If we were to follow to its consequences this parallelism between movements and feelings, it would lead us to the position Professor Clifford adopts, that every movement whatsoever has a quasi-mental accompaniment. For we see in physics that when waves succeed one another so fast as to overlap, they form compound waves which may vary in size and shape to any extent, according to the number and collocation of the elementary waves of which they are composed. Thus nerve waves arriving from different directions, and encountering each other in a ganglion, may combine and send out along different efferent fibres more or less complex resultant waves. And if each nerve-wave has its concomitant feeling, composite feelings would arise from this combination corresponding to the composite waves.

Further, a wave, which Mr. Spencer speaks of as the unit of nerve action, is so far from being a unit of motion, that it is made up of a series of movements, each particle concerned in them describing, as Helmholtz shows, a figure more or less resembling a circle. Of these movements doubtless some will be simultaneous, and others successive. In proportion as they

..... ¹ *Principles of Psychology*, vol. I, sec. 60.

are simultaneous, they will occupy more space. In proportion as they are successive, they will occupy more time. But even the simplest single movement requires a certain portion both of space and of time.

Moreover, nerve waves are movements among the molecules which form the nervous organism. But many of these molecules are themselves highly complex systems of atoms, undergoing incessant changes among themselves, affecting their reactions on surrounding molecules; and here is another source of varieties in the waves they form.

If, then, the parallelism of feeling be pushed to its consequences, we must say that the feeling which corresponds to a nerve-wave is no more a true unit of feeling than the wave is of motion, but a highly composite product of many feelings, some simultaneous, and others successive, and requiring corresponding portions of space and of time. And if we go on to enquire to what a true unit of feeling does correspond, the reply can only be that its analogue must be a true unit of motion—the simplest movement of an ultimate atom. For if a simple unit of feeling corresponded to a combination of units of motion, the parallelism would be incomplete. An absolute undecomposable minimum of feeling would have as its correlative a complex movement, which, if deprived of any of its elements, would have no correlative of feeling at all; in other words, an entirely new product would arise with nothing to produce it. And if a minimum of feeling has as its analogue, no movement of any peculiar kind, but an absolute unit of motion, these conditions of feeling will exist, not only in certain nervous organisms, but wherever movements exist—the conclusion which Professor Clifford expresses in words already quoted.

Reasons have already been urged against this supposition as a true account of the facts. Among other objections, it seemed impossible that the elaborate operations of intelligence could arise from the mere aggregation of the simplest minima of feeling emerging as concomitants of movements. These, it was shown, must be simultaneous or successive. If simultaneous, the movements must occupy space proportioned to their number, and over that portion of space the units of feeling to be combined must extend. How could the mere contiguity in space of the barest minima of feeling blend them together into an act of advanced intelligence? If successive, the earlier movements must be over before the later begin, and so must the earlier feelings be. How could rudimentary feelings that are *past* combine with *present* rudimentary feelings to form a developed consciousness?

But it must be admitted that facts apparently unquestionable lie open to similar difficulties. It seems undeniable that composite feelings are built out of simpler ones, as in the case of musical tones, mentioned by Mr. Spencer, which arise when separate beats of sound follow one another with sufficient rapidity; or the continuous ring of light which appears when a burning stick is made to revolve with sufficient speed. Besides, no feeling is appreciable which does not last a certain minimum of time, and every such minimum must be made up of the past along with the present. The truth is, these difficulties belong to the metaphysical problem of the nature of time, and cannot be dealt with by Realistic conceptions. As against the adequacy of Realistic conceptions, the above objections are valid. Mr. Spencer treats of the parallelism in its lowest terms, in the following passage:—

‘When the two modes of Being, which we distinguish as subject and object, have been severally reduced to their lowest terms, any further comprehension must be an assimilation of these lowest terms to one another; and, as we have already seen, this is negatived by the very distinction of subject and object, which is itself the consciousness of a difference transcending all other differences. So far from helping us to think of them as of one kind, analysis serves but to render more manifest the impossibility of finding for them a common concept—a thought under which they can be united. Let it be granted that all existence distinguished as objective, may be resolved into the existence of units of one kind. Let it be granted that every species of objective activity may be understood as due to the rhythmical motions of such ultimate units; and that among the objective activities so understood, are the waves of molecular motion propagated through nerves and nerve centres. And let it further be granted, that all existence distinguished as subjective is resolvable into units of consciousness similar in nature to those which we know as nervous shocks, each of which is the correlative of a rhythmical motion of a material unit, or group of such units. Can we then think of the subjective and objective activities as the same? Can the oscillation of a molecule be represented in consciousness side by side with a nervous shock, and the two be recognised as one? No effort enables us to assimilate them. That a unit of feeling has nothing in common with a unit of motion becomes more than ever manifest when we bring the two into juxtaposition.’¹

Farther on Mr. Spencer closes the subject with the following words :—

‘ This brings us to the true conclusion implied throughout the foregoing pages—the conclusion that it is one and the same Ultimate Reality, which is manifested to us subjectively and objectively. For while the nature of that which is manifested under either form proves to be inscrutable, the order of its manifestations throughout all mental phenomena proves to be the same as the order of its manifestations throughout all material phenomena.

‘ The law of evolution holds of the inner world as it does of the outer world. On tracing up from its low and vague beginnings the intelligence which becomes so marvellous in the highest beings, we find that under whatever aspect contemplated, it presents a progressive transformation of like nature with the progressive transformation we trace in the universe as a whole, no less than in each of its parts. If we study the development of the nervous system, we see it advancing in integration, in complexity, in definiteness. If we turn to its functions, we find these similarly show an ever-increasing inter-dependence, an augmentation in number and heterogeneity, and a greater precision. . . . And when we observe the correlative states of consciousness, we discover that these, too, beginning as simple, vague, and incoherent, become increasingly numerous in their kinds, are united into aggregates which are larger, more multitudinous, and more multiform, and eventually assume those finished shapes we see in scientific generalizations, where definitely quantitative elements are co-ordinated in definitely quantitative relations.’¹

¹ *Ibid.*, vol. I., sec. 273.

We have now fully before us the hypothesis that states of consciousness are, whenever they occur, inseparable concomitants of nerve movements—a hypothesis which saves physical continuity, which is ruptured on the alternative view, that states of consciousness are links of an exceptional kind in the chains of physical sequents. So far, the former alternative is unquestionably to be preferred, and it is adopted, we have seen, with certain modifications, by very eminent authorities, whose special modes of representing it have just been criticised. We have still to consider it in the fuller form given to it in the preceding extracts by Mr. Herbert Spencer.

Mr. Spencer does not, to my knowledge, expressly say whether he supposes the doubleness which he ascribes to acts exhibiting both consciousness and movement, confined to these acts, or characteristic of all acts. But if, like Professor Clifford, he conceives the doubleness in question to be universal, he could hardly have failed to enunciate clearly, and adduce arguments to substantiate, such an important proposition, against which, as we have seen, insuperable objections lie. If, as is probable, it is only certain acts of the nervous organism which Mr. Spencer conceives to possess these two faces, his view is open to the criticisms lately made on a passage of Professor Bain, who distinctly teaches that—

‘The proper physical fact is a single, one-sided, objective fact ; the mental fact is a two-sided fact, one of its sides being a train of feelings,’ and the other the physical basis which sustains the feelings.

The nervous organism being in every sense a part of the material universe, if the objective character of certain of its phenomena is merely—as Mr. Spencer maintains

—one aspect of an inscrutable reality, which has a very different and subjective side, we are bound to ascribe this doubleness, these physical and psychical faces, to all the other phenomena of the material universe. We cannot continue to regard physical phenomena in general as simply objective facts possessing a physical face only, if we deny that simply objective character to certain phenomena that are as truly physical as any. If that is a true description of certain facts of the nervous organism, it must be a true description of other facts of the material universe, to which the entire nervous organism, as a material structure, in every respect belongs. Its movements would be exceptional indeed, if *they alone*—or some of them—were not simple movements, but inscrutable acts showing motion only on one side. ‘We are obliged’ here, as Professor Clifford says, ‘to save continuity in our belief.’ When mental acts and nerve changes are regarded as distinct operations, this difficulty does not arise; each retains its peculiar characteristics, and then the puzzle is to weave such incommensurable processes together; but when, as here, the two are conceived to be associated so closely as to be called one act rather than two, a property is ascribed to nerve movements which, if belonging only to some physical changes, separates these fundamentally from all others; especially on Mr. Spencer’s view, which makes the nerve change accompanying a thought no longer worthy to be called a fact, but only one face of an underlying and inscrutable fact. And, as urged before, if psychical phenomena emerge only in nervous organisms, and vanish again there without affecting the physical situation, and, therefore, without employing physical energy, no force

exists to produce them, unless a distinct and special power be invented for the purpose. A series of acts which before had but one aspect, now has two, and now again but one ; and yet the appearance of the transient aspect does not alter the series in its permanent aspect in the slightest degree. To conceive facts distinguished from nerve movements by 'a difference transcending all other differences,' yet so essentially one with them that their occasional emergence produces no effect whatsoever on the physical situation, is to suppose a jumble of inconsistencies, to conceive the inconceivable. But, indeed, if the particular nerve movements concerned lose the objective character which other physical facts possess, and wear only a psychical face, the physical situation is profoundly altered when mental acts take place, and the physical continuity ruptured which the hypothesis before us was devised on purpose to preserve.

Mr. Spencer describes mental and physical phenomena as 'subjective and objective faces of the same fact,' but as he often speaks of objective facts which have not subjective faces, but never of subjective facts which have not objective faces, it is clear that the objective aspect is the constant, as it is generally the sole feature existing, the subjective aspect being occasional only, and supposed not to affect the objective character of the fact when it is present, and never existing alone, as the objective character does. On these grounds, it seems fair to describe the objective face as essential, and the subjective as non-essential. But if these two faces differ from each other in that one is an invariable and essential, the other an occasional and non-essential character, the two can hardly be identical in such wise that the subjective aspect is

nothing additional when it is present, or deficient when it is absent. If its presence or absence is indifferent to the act or fact as objective, it is not the same act as that called objective. It is impossible to predicate *oneness* of acts both distinct and separable. And if confined to the nervous organism, *where* could these new attributes come from?

But let us examine more closely the phrase by which Mr. Spencer is accustomed to describe the allied physical and mental processes. 'Mind and nervous action,' he says, 'are the subjective and objective faces of the same thing';¹ and in another place he calls them, 'inner and outer faces of the same change.'² Elsewhere³ he speaks of 'that ultimate reality in which subject and object are united,' all knowledge of which he declares to be impossible. In other words, he teaches that the same change is a nerve-movement on one side, and on another side a feeling. Similarly, Professor Bain speaks of 'a two-sided fact,' 'a two-sided cause'⁴ and the two processes being regarded as 'in this way correlative and concomitant, come to be spoken of as one; though, as Mr. Spencer states, 'we continue utterly incapable of uniting the two, so as to conceive that reality of which they are the opposite faces.'⁵

We have before us, therefore, two faces, or sides, presented by a single fact or change. Wherein, then, let us ask, does a *face* differ from a *fact*? In one sense, of course, a *face* must be allowed to be a *fact*. But if distinguished, as in the case before us, a *face* must signify an appearance, under the guise of which

¹ *Principles of Psychology*, vol. I, 140.

² *Ibid.*, I, 128. ³ *Ibid.*, I, 627.

⁴ *Mind and Body*, pp. 131, 134.

⁵ *Principles of Psychology*, I, 625.

an occult fact or change is presented to us. Here we have two different appearances of a single fact, which does not itself appear. That is to say, the *fact* is not among phenomena, but belongs to the unknowable realities behind them, with which at present we have nothing to do. It is only faces or phenomena with which we are concerned.

Now ordinarily, Mr. Spencer, like all the world, speaks of *phenomena* as facts, things, or realities. But here, when he treats of nervous organisms—and it is indispensable, in order to preserve physical continuity, to regard physical and mental processes as if they were one and not two—he effects the combination by saying there are two *faces* indeed, only they are different sides of a single change. But those two faces are as much facts as any other of the thousand facts presented to us, for all alike are *phenomena*. If they are to be called faces, all other phenomena must be so called, for all belong to the same category ; while, on the contrary, the one fact in which, according to Mr. Spencer, the two faces are merged, belongs to quite another category ; that is to say, belongs not to phenomena, but to the unknowable realities which are supposed to lie behind them. Hence, *in the world of phenomena*, the two faces—nervous action and feeling—count as two things, and cannot be merged into one ; the reality in which they are supposed to be united belongs not to the world with which we deal. No distinction can be drawn, therefore, between faces and the fact or change of which they are sides, except one which postulates ontological reality of the fact, and excludes it from the world of phenomena, and the single change for which alone room can be found is one of the two faces, and not an underlying reality. It follows that the invincible

difficulty of finding a double series of processes, physical and mental, where we can account only for one (the nerve-changes not admitting of a break, and the physical energy not being able to expend itself in aught but movement)—this invincible difficulty is in no way diminished by calling the two processes in question different sides or faces of a single change. For that change—if such there be—belongs to another world altogether. It is the two sides or faces which are phenomena, and as such are commensurate with all other phenomena. All other phenomena must be called faces if these are. And these must be called facts and things if other phenomena are so named. We have no right, therefore, to call the processes in question a *two-sided fact*, when we are treating of phenomena. They constitute *two facts*, separated, as Mr. Spencer allows, by ‘a difference which transcends all differences,’ and on that ground possessing a stronger claim to be regarded as distinct than any other facts possess. Two, therefore, they remain, however closely correspondent, and with no explanation forthcoming of the difficulty that we can find room only for one, unless one of the two faces be regarded as the fact.

§ 13. THE EXTREME MATERIALISTIC THEORY.

One bold proposition remains—the extreme form of Materialism expressed in the statement of Moleschott—‘thought is a motion of matter.’ By this it is not meant that thought is a compound which, on being resolved into its elements, is found to consist of matter in motion, as water is a compound which consists of oxygen and hydrogen, substances having properties different from its own. That illustration does not hold,

because the properties of water, though different from those of the elementary gases composing it, are the same in kind as theirs, being simply modes of change, that is, of motion, which, in certain conditions, water undergoes and produces; whereas the properties of thought, as we conceive them, are utterly unlike the properties of motion, and must continue to seem so to us after we have affirmed their unity. The view before us proclaims the absolute identity of the physical and psychical processes; it teaches that certain movements of the nervous organism do, while they continue such, and without any additional element, themselves constitute the act we call thought. In considering this extreme Materialism, we must needs transgress the bounds of Realism, but it is pre-eminently a realistic view, and as such it is examined here.

To hold that thought is a motion of matter is manifestly to be freed from the hopeless difficulties which encumber the supposition that two processes are concerned in thought; but among the inferences it bears must be reckoned this, that since all the operations of physical energy are essentially alike, thought, if identical with one mode of motion, must be essentially like every other. The sensation of light, for example, being, on the supposition now made, identical with certain movements of the optic nerve, must be essentially like the luminiferous vibrations of the aether, the movements of a living cell, the fall of a stone, and all other motions whatsoever. In short, the radical diversity which appears between all material and mental facts is proclaimed illusory and abolished. This necessary conclusion of extreme materialism is the very same as that at which the idealist arrives. The idealist, examining our relations to the external world,

discovers that, universal and irresistible as is the conviction of its existence, that conviction cannot be proved to be true. We attribute certain of our sensations to external phenomena as their causes, but we can know only that of which we are directly conscious. We are conscious only of feelings, using that word in the widest sense, and the external world we believe in does not consist of feelings. Sir W. Hamilton, indeed, maintains, with many philosophers, that in external perception we are directly conscious of something different from ourselves. But even he allows that we can be directly conscious only of what is in actual contact with our nervous organisms; that in sight, for example, we cannot be directly conscious of the distant sun, or of any object we see, but only of the light which touches the retina. And since the researches of Helmholtz and others show that consciousness arises only in the nerve-centres of the brain, and not at nerve-extremities, like the retina, we cannot be directly conscious of light at all, for its vibrations do not pass beyond the retina. And it is difficult to understand what can be meant by being directly conscious of an external object, of a table, for instance, except that we have feelings of extension, resistance, and the rest, which we believe are produced by the table. And then it is the feelings, and not the table, of which we are conscious. And no conclusive reason can be assigned for the belief that the table is there to cause the feelings.

So Bishop Berkeley insisted that we can be conscious only of ideas, and that they, the immediate objects of perception, are the only objects of the existence of which we have evidence. The 'matter' he repudiated was the occult something supposed to exist

as a substratum behind and distinct from our perceptions. The idealist interlocutor, in one of his dialogues between Hylas and Philonous, says :—

‘I am not for changing things into ideas, but rather ideas into things ; since those immediate objects of perception, which, according to you, are only appearances of things, I take to be the real things themselves.’

And in his *Principles of Human Knowledge*, Bishop Berkeley writes :—

‘I do not argue against the existence of any one thing that we can apprehend either by sensation or reflection. That the changes I see with my eyes, and touch with my hands do exist, really exist, I make not the least question. The only things whose existence I deny is that which philosophers call matter, or corporeal substance.’

The law of energy supports the argument of the idealist here. For consciousness is seated in the nervous organism alone ; whatever its nature be, its manifestations take place within the borders of that organism, which is a material structure, and a vehicle of physical energy. If, then, consciousness informs us *directly* of any physical facts, they can be those only of the nervous organism, and they must consist of movements taking place there *at the time* the feeling which reveals them to us is experienced. For, as Sir W. Hamilton states, ‘Consciousness is a knowledge solely of what is now and here present to the mind.’¹ Of physical changes antecedent, by however short an interval, to the feeling which is supposed to be aware of them, we cannot possibly, therefore, be immediately percipient. But physical changes occurring in the

¹ Notes on Reid, p. 810.

outer world are antecedent in time to any feeling which can reveal them; for before they can be felt, the physical energy employed in them must pass on to operate as nerve-changes, and when so converted, it has, of course, ceased to exist in the form it wore previous to its conversion. Therefore the feeling which accompanies an act of nervous energy must always and necessarily be later in time than the external movement which generated the nervous change. Hence, direct consciousness of aught outside the nervous organism is impossible.

And yet the physical changes occurring *within* that organism, the only ones which it is conceivable we might immediately perceive, because they are co-existent with consciousness in space and in time, are never revealed to us as such. The feelings of extension and the rest which, according to Sir W. Hamilton, we attribute to our organism, are psychical, not physical. We are not conscious that we have a nervous organism at all. Since the physical changes *there* are not revealed to us, *à fortiori*, others, farther removed in space and time, cannot be. Thus, the exact opposite of what we might expect takes place; the things of which we seem directly conscious, the outward objects we say we touch, see, &c., it is demonstrably impossible that we should immediately perceive, while we are entirely unconscious of those physical accompaniments of our sensations which are the only physical facts accessible to us, if any are.

It is generally admitted, even by those who are not idealists, that the argument of Idealism is incapable of direct refutation. Professor Huxley writes of it:—

‘All our knowledge is a knowledge of states of consciousness. “Matter” and “force” are, so far as we

'can know, mere names for certain forms of consciousness. . . . It is an indisputable truth, that what we call the material world is only known to us under the forms of the ideal world; and, as Des Cartes tells us, our knowledge of the soul is more intimate and certain than our knowledge of the body.'¹

Now, the Materialism which absolutely identifies the physical and psychical processes concerned in thought lands us in this conclusion of Idealism. For this identification abolishes the distinction between the material and ideal worlds at their points of meeting, and proclaims, therefore, that the psychical facts of perception, instead of being in any wise copies of physical facts, are themselves physical facts. It may be said that to merge, with Berkeley, all physical facts in psychical ones, is by no means the same proceeding as to identify the physical and psychical processes concerned in thought. But if these processes be identified, physical and psychical facts can no longer retain their independence of each other. Instead of being two, they are one, and there can be no question as to what character that one must bear.

For the material world, certain of the processes of which are thus declared to be the same things as perceptions, is confessedly known to us only as the hypothetical external cause of those perceptions, and it is assumed to be such simply because something different from our perceptions, and outside them, seems necessary to account for them. But there is no such necessity, if the material world and perceptions are found to be the same things wherever they meet; and consequently the sole ground for supposing that an external world exists is, on the present hypothesis, taken away. Hav-

¹ "Lecture on Des Cartes," *Macmillan's Magazine* for May, 1870.

ing merely assumed a distinction between the worlds of matter and consciousness, if we find that where the two meet they are not distinct, the obvious course is to abandon the assumption. To retain the distinction between the two, and seek some hypothesis to identify them, when the necessity for supposing that they are two no longer exists, is to remain burdened with a difficulty which has vanished. And it would be out of the question to effect this union by merging the world presented to us in consciousness in the material world whose existence is only assumed. If one of the two must be renounced, obviously it is the hypothetical material world which must be surrendered, and then the conclusion of the idealist is established.

Hence, the extreme Materialism which identifies thoughts and movements does, in fact, merge the material universe in the states of consciousness in which alone it is presented to us. Hence, also, to recall for a moment Mr. Spencer's view, if his two-faced fact be really one, his statement of the problem amounts to Idealism; while, if his two faces count among phenomena as two facts, his expression gives no relief from the difficulty.

§ 14. THE PROBLEM INSOLUBLE ON THE ASSUMPTION OF REALISM.

We have now passed under review the accounts which leading authorities give of the relation between the physical and mental processes which take place in the nervous organism. To sum them up briefly, they fall into three main divisions. One division consists of suppositions that acts of mind are distinct from nerve-changes, yet in some way products of them. We have

seen that Dr. Carpenter uses language which implies that mind and physical processes act and re-act on each other; even in the paper in which he throws doubt on his former opinion, that sensation is a link in the chain of physical sequents; and that Professor Huxley, whose language vacillates on this question, distinctly maintains, in his paper on *Animal Automatism*, the inconsistent opinions that sensations are caused by nerve-changes, but are powerless to cause them. It is certain that no theory which implies that the production of consciousness ruptures physical continuity can be in harmony with the conclusions of science respecting energy and molecular physics. But if consciousness is distinct from nerve-changes, and is caused by them, its production must rupture physical continuity.

Another class of suppositions respecting this question maintains physical continuity, by representing the alliance between mental and physical processes as so intimate that they are not successive and distinct, but strictly concomitant and inseparable acts, so that each series proceeds without breaking in upon the other, and some say that they form in reality but one series with two sides. We have found that this specious idea will not bear examination as a scientific account of the facts. For to suppose, with Professor Bain, that this double-faced unity exists only where consciousness is conceived to exist—at certain points of the nerve centres of higher animals—is to suppose the emergence there of an entirely new kind of facts, which cannot, on the hypothesis, be produced at the expense of physical energy, and which there is no other power to produce. On the other hand, to suppose the parallelism universal, as Professor Clifford does, merely in order ‘to save continuity in our belief,’ is to make a supposition which

has not a single fact to support it, and one which, when followed out into details, fails to account for the developed forms of consciousness which it was devised in order to explain. And to substitute one process for two by Mr. Spencer's device of calling the two, different sides of the one, is to confound phenomena with the unknown realities behind them ; since the underlying fact, if it exists at all, must belong to those realities, and the two sides which appear must take rank among phenomena, and still perplex us by their doubleness.

To the third class belongs the extreme supposition which converts the inseparable concomitance and underlying unity of the physical and mental processes into absolute identity. It has been shown, that to recognize no distinction between mental and material changes, is to render the assumption of a world external to consciousness superfluous, for the profound distinction between them is the only ground of that assumption. Matter is annihilated if it be identified with mind.

I think it may be said, without fear of contradiction, that none of these accounts of the relation between consciousness and material changes can be accepted as a possible representation of the fact. Complete explanations, indeed, they do not profess to be ; but they are all untenable even as far as they go ; decisive objections lie against each. Surely we may go farther, and say with confidence, as the result of the preceding examination, that no supposition can possibly be devised to solve the problem with which we have been dealing—the emergence of consciousness among the mechanical processes of a material structure. If so, it is useless to seek for any new hypothesis. But we are not therefore compelled to abandon

the mystery as hopeless. For we may be sure that there is a true and consistent account to be given of everything in nature; isolated facts, and startling breaks of continuity, are not in her, but in our conception of her. If, then, a problem with these *unnatural* features presents itself, on which so much admirable ingenuity has been expended in vain as on this, we may well inquire whether nature does indeed present the problem as we conceive it; in other words, whether the fault is not in our misapprehension of the facts, and the difficulty one we have created for ourselves. For if, through our misconception, an imaginary problem of this kind did arise, it would, in all likelihood, be insoluble, and the impossibility of solving it would be a sure indication of its fictitious character. May not the invincibility of the difficulty before us be the consequence and evidence of such a misconception?

The problem which proves utterly insoluble is to account for the emergence of feelings among the mechanical processes of the nervous organism, that being a strictly material structure, whose operations consist of movements, and admit no break of continuity. We have all the evidence of which the case admits, that the nervous organism is as completely subject to physical laws as the universe around; but, according to the problem before us, certain series of nerve changes are accompanied by series of feelings, wholly incommensurable with movements, yet exhibiting the closest parallelism with them, the two constituting a double set of processes, for only one of which we are able to account. To explain this superfluous doubleness is the riddle.

It has been already pointed out that physical science

proceeds on the assumption of Realism—that external phenomena are what they seem. The validity of that assumption it is not the business of physical science to discuss; its province is simply to follow it to its issues. But when we are brought face to face with an intractable problem like this, the question presents itself whether it may not arise out of the assumption on which we are proceeding, and stand or fall with it. If so, if the assumption of Materialism involves us in this insoluble problem, and it disappears if the assumption be abandoned, that is very strong, if not decisive evidence against the truth of the assumption. An erroneous hypothesis is certain sooner or later to entangle those who hold it in hopeless difficulties, which condemn the hypothesis they encumber.

Then, does the difficulty before us arise in consequence of our assuming, as Materialism does, that external phenomena are what they seem? That it is so can hardly be denied, when we remember the indisputable fact that the material world is presented to us only in states of consciousness; for it follows that the distinction between movements and feelings exists only when we assume that the material world is an external reality, separate from the consciousness which perceives it. That is to say, speaking strictly, we see + only *phenomena* of the material world—*appearances* consisting only of *feelings*, but we assume that the material world itself is before us. We say, for example, that we see a stone fall; but, as already explained, science shows that, speaking strictly, that is impossible. We have certain sensations of sight, that is to say, certain feelings, which reveal to us, we suppose, that external occurrence. But those feelings,

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seated in the brain, are entirely distinct in nature, and remote, both in space and in time, from the occurrence they are assumed to reveal. The *appearance* of the falling stone is all that we actually perceive, and that appearance is a feeling; of the external movement itself, this at least is certain, that it lies outside consciousness.

This holds good, of course, of all the facts of the external world; hence we may say generally, that in what we call the perception of material changes, outside movements themselves are not before us, but only appearances of movements consisting of feelings. We are presented, then, with but one thing, the mental appearance of a material fact, and erroneously suppose that we are presented with two—the fact as well as the appearance. In other words, the parallel facts of feeling and movement turn out to be the single fact of a feeling appearing like a movement. The superfluous doubleness proves to be imaginary and illusory, a difficulty of our own creation.

And it curiously happens that this illusory multiplication of facts which gives rise to the problem of two parallel processes is not an error of the vulgar, but a fabrication of science alone. The vulgar, indeed, erroneously suppose that they perceive external objects and changes themselves, but they do not imagine that, in addition to these external facts, there are mental appearances which correspond to them, each to each. But science, assuming with the vulgar that the facts of the external world are what they seem, discovers, by comparison of phenomena, that external movements can be apprehended only by means of feelings seated in the brain, and so constitutes these feelings another and corresponding set of facts, and counts both among

phenomena. But whether it be right or wrong to suppose that facts of the external world correspond with these appearances in the brain, one thing is certain, that those external facts do not come before us *as phenomena in addition* to these appearances in the brain : and to count them as if they did is to count them twice over, and so create a double series of processes, where we discover only one, and cannot find room for two.

It appears, then, that in each case of so-called external perception, the vulgar recognise only the external object, and the idealist recognises only the mental appearance (it was a great point with Bishop Berkeley that he and the vulgar were agreed in recognising only the one thing which they saw), but the scientist recognises both, and counts both among the phenomena with which he deals, though only the appearance is actually before him : and that is why he maintains the existence of parallel sets of mental and material processes, and is hopelessly perplexed at finding no trace of them both, and no room for them both among the phenomena concerned. It must be admitted that a difficulty, which consists of two closely parallel sets of facts appearing where there is room only for one, is very likely to have arisen from counting one set of facts twice over, and that seems to be the explanation here.

The relation between so-called material phenomena and the external facts supposed to correspond to them, demands a much fuller discussion, and will receive it when other facts bearing on it, and so affecting the hypothesis of Materialism, have been brought forward. The subject has been briefly mentioned here as supplying the clue to the supposed problem of the emergence of feelings among the physical processes of the nervous

organism ; if so, the fact obviously constitutes an important piece of evidence for judging of the essential truth of the materialistic assumption. Its bearing upon that question will be dwelt upon later ; at present we return to the problem which has lately occupied us, to ask what is the true position for science to take in regard to it, in view of the clue *just suggested to its solution*.

It has just been shown that when, using the phraseology of Materialism, and accepting the conclusions of science respecting perception, we speak of *external phenomena*, we conceive that we are dealing with two corresponding sets of facts—that is to say, with certain material objects outside us, and with certain feelings in the brain excited by them ; and a most perplexing problem arises here, because, in point of fact, science is unable to discover the slightest trace of feelings in the brain, and more, to suppose that such things as feelings are generated among the physical processes there implies a quite inadmissible rupture of physical continuity. But it has been explained that the supposition which gives rise to this difficulty is erroneous. It is not true that two sets of facts are before us in so-called external phenomena—material objects and a mental picture of them. Only the mental picture is actually before us, and to regard its contents as external is to make the materialistic assumption respecting them. We may proceed on that assumption, and treat the phenomena as material objects, or we may regard them strictly as they are presented to us—that is to say, as parts of consciousness ; but we cannot do both at the same time, because we are not dealing with two sets of facts, but with the same set of facts regarded in these two different ways, and we take them twice over if we

reckon up a mental as well as a material series. Further, facts regarded as mental can never even appear in series with facts regarded as material, for the former consist of conscious states, while the latter are conceived to consist of objects beyond consciousness, a hypothesis incompatible and incommensurable with the former view, and incapable therefore of being held respecting some members of a series, and dropped in regard to others.

X Hence, when, proceeding on the assumption of Materialism, we treat certain phenomena of consciousness as external objects, we must consistently adhere to the assumption till we abandon it altogether; we must never, therefore, class among facts viewed as external and material, facts viewed as mental; for to do so would be to play fast and loose with our assumption, and regard facts which in strictness all stand upon the same level,—some of them in the light of the materialistic hypothesis, and others as independent of it. On that hypothesis, we treat facts of consciousness as situated on an outer line of objects beyond us, and must abandon it whenever we are recognizing any such facts as situated,—where in strictness all facts actually before us are placed,—on the inner line of mental appearances.

But, compelled, as we are, in ordinary life, to pass constantly and instantly backwards and forwards between the materialistic assumption and facts of consciousness, we do not notice that the two points of view are incompatible, but treat what we call material facts as standing in the same rank with our states of mind.

§ 15. MENTAL FACTS NON-EXISTENT TO SCIENCE.

If the view just presented be correct, there is no doubt about the conclusion which science should adopt in regard to the problem of accounting for the production of feelings in the brain. Feelings, being mental facts, are non-existent to science, for science proceeds on the materialistic assumption which regards facts of consciousness as situated on an outer line of objects beyond us, and cannot blend facts so regarded with others treated as mental without committing the mistake just pointed out, and applying and abandoning a hypothesis in dealing with the same series of facts.

Science, therefore, is bound to adhere to the materialistic assumption, and recognize only material facts; and what follows when this course is taken? The problem which has baffled all ingenuity requires no solving, for it exists no longer; the brain, like all the rest of the physical organism, like the entire material universe, presents material changes alone, and there is nothing to disturb their continuity. The scientist, who finds in the brain no trace of feelings, and no room for them, ceases to expect them, for his theory being brought into harmony with his facts, he requires them no more.

The conclusion of extreme materialism, that the brain is the seat of physical changes alone, is, then, entirely justified, so long as we proceed on the materialistic assumption, a very important qualification, as will hereafter appear. And let us ask whether that is not the only proper conclusion for science to adopt, even apart from the consideration of the incompatibility of the materialistic and mental points of view which has just led us to it? For does not our lengthened ex-

amination of theories of the interaction of body and mind prove that there is no evidence whatsoever, of which physical science can take cognizance, that facts additional to those of the material organism are present in the brain? The evidence is all against the supposition that any of the changes there bear an exceptional character to distinguish them from other physical changes. By what right, then, do scientific men persist in ascribing to certain changes of the brain concomitants of an entirely different kind from nerve-movements, yet inseparably associated with them, when there is no scientific evidence of their presence, and it is utterly impossible to account for their production? When they do so, they abandon the standpoint of physical science, and take up another incompatible with it. The only proper inference, from the absence of scientific evidence for the presence of conscious states in the brain, is that they are not present, and that is the best of all reasons why it is impossible to account for their production. Surely, science is bound by all the canons of evidence to disallow facts which leave no trace of their presence which it is competent to recognize, and which no ingenuity can combine with the physical facts of which it takes cognizance; in other words, science is bound to confess that this insoluble problem has been created by an attempt to combine facts which present themselves from two inconsistent points of view.

It is strange that scientific men have not drawn this conclusion, and boldly said,—‘We find no scientific evidence of mental facts in the brain; physically speaking, there is absolutely no room for them there; therefore, physically speaking, we disallow their existence.’ The extreme materialists have been no more consistent

herein than others, for they have maintained that brain changes *are* thoughts, a preposterous opinion, ignoring a difference which transcends all differences: the only legitimate conclusion is that, on the materialistic hypothesis, no mental facts present themselves anywhere; physical continuity is complete; there is nothing but the material universe. To recognize a single mental fact is implicitly to dismiss the materialistic hypothesis.

But though scientific writers have not, to my knowledge, taken this position, they have admitted,—what might well have led them to it,—that they have no such evidence for the existence of minds in others as they have for physical facts.

Professor Huxley writes,—

‘It is wholly impossible absolutely to prove the presence or absence of consciousness in anything but one’s own brain, though, by analogy, we are justified in assuming its existence in other men.’¹

So Professor Clifford,—

‘I have absolutely no means of perceiving your mind. I judge by analogy that it exists, and the instinct which leads me to come to that conclusion is the social instinct, as it has been formed in me by generations during which men have lived together; and they could not have lived together unless they had gone upon that supposition.’²

‘We have no possible ground for speaking of another man’s consciousness as in any sense a part of the physical world of objects or phenomena.’³

¹ “The Hypothesis that Animals are Automata,” p. 565 of the *Fortnightly Review* for November, 1874.

² “Body and Mind,” p. 728 of the *Fortnightly Review* for Dec., 1874.

³ *Ibid.*, p. 727.

Mr. Herbert Spencer uses language to the same effect :—

‘Each individual is absolutely incapable of knowing any feelings but his own. That there exist other sensations and emotions is a conclusion implying, in the first place, the reasonings through which he identifies certain objects as bodies of like nature with his own body ; and implying, in the second place, the further reasonings which convince him that along with the external actions of these bodies there go internal states of consciousness, like those accompanying such external actions of his own body.’¹

A very proper distinction is drawn in these passages between the evidence we have of consciousness in others, and the evidence we have of our own. And previously attention was directed to the very different kinds of evidence by which our states of consciousness, and the facts of the external world, are supported. We have here, then, three different sets of facts resting on three different kinds of evidence, and it is important to our present purpose to note carefully the distinctions between them.

§ 16. NO EVIDENCE OF CONSCIOUSNESS IN OTHERS.

Considerations already urged will bear out the statement that the evidence we each have of our own states of consciousness is the most direct and conclusive of all. As metaphysicians have rightly insisted, it is impossible to doubt the existence of our own feelings, because, the doubt being itself a feeling, the existence of the doubt establishes the existence of a feeling. But it is only my present conscious state which rests

¹ *Principles of Psychology*, vol. I, p. 99.

on what to me is such indubitable evidence. My past states of consciousness, my personal identity, imply the veracity of memory, which is an assumption, however, little questioned. So are all assertions respecting the nature of consciousness; but the bare-existence of my present feeling, or group of feelings, cannot by me be denied.

But when I say, 'I perceive an external object,' I venture into a region of assumptions, for I assume that outside my state of consciousness is some material thing different from it. That is the materialistic hypothesis which it is quite competent to us to make, if we consistently adhere to it, and bear in mind that it is an assumption. And we have seen that these conditions prohibit us from treating any states of consciousness *as such*, while we are treating others as external things. That would be to play fast and loose with our assumption; for when, according to it, we count certain states of consciousness to be external objects, we make a supposition incompatible with their being states of consciousness. If they are the one they cannot be the other, nor can they be combined as coordinate facts with other states of consciousness, respecting which the assumption is not made.

Here then, we have two distinct and incommensurable sets of facts—the one set, our own states of consciousness; the other set, certain of those states, assumed to be something else, namely, external objects. And now, what position should be assigned to the third set of familiar and unquestioned facts—the feelings, or conscious states, of others? It is certain that they do not belong to either of the other classes—they are not our own states of consciousness, nor any of these so vividly impressing us as belonging to others, that, as in

the case of external objects, we count ourselves face to face with feelings not our own. In what relation, then, do the minds of other men stand to us? And what means of apprehending them does physical science possess?

Their minds make no direct impressions on us, their mental acts themselves we do not perceive; but from certain of their bodily positions and movements, we infer that they think and feel; from gestures, namely, from expressions of countenance, and from vocal utterances, especially from such as are articulate. These last, which constitute language, the chief medium of communication between minds, obviously effect their purpose by the same means as the rest. Certain movements of the vocal organs of others excite in us certain sounds, which are the recognised signs of certain ideas; and when their bodies present us with those symbols, we accept them as signs that their minds would convey to us the ideas which correspond. Written or printed words are an equivalent set of symbols addressed to the eye, and in like manner convey ideas exclusively by means of material objects and their movements. In every case, it is certain bodily changes in our fellows which are to us the indices of thoughts and feelings, themselves unperceived.

Since, then, others signal to us only by bodily movements, what right have we to infer that thoughts and feelings altogether imperceptible lie behind them? According to the three writers just quoted, the analogy between others and ourselves justifies this inference. Certain feelings, they say, go along with certain movements of our own bodies, and therefore it is fair to conclude that similar movements of the bodies of others

are accompanied by corresponding states of consciousness in them. Our warrant, then, for believing that consciousness exists in the bodies of others is, we are told, that it exists in our own. But is it *a fact of physical science* that consciousness exists in combination with our own bodies? Undoubtedly, if consciousness is capable of existing in physical combination with our own bodies, it is equally capable of being physically connected with the bodies of others. But, likewise, all the considerations which lie against its physical union with the bodies of others, hold with equal force against such a union in ourselves. It is perfectly true, as just pointed out, that we each have indubitable evidence of the existence of our own consciousness; but that our own consciousness exists in physical combination with our bodies is a very different and a most questionable proposition. For our bodies belong, of course, to the assumed external world, which, as we have seen, it is not competent to us to combine with facts of consciousness which do not imply that assumption. When we call certain of our conscious states our bodies, we cease to regard them as conscious states, and are not at liberty to blend with them other conscious states, still regarded as such. In other words, we proceed on the materialistic hypothesis when we speak of our own bodies, and must recognise only material facts, and may not, therefore, blend even our own feelings with that material structure which we conceive our body to be. Thus the only reason alleged to prove that consciousness is united with the bodies of others, namely, that it is united with our own, breaks down. We might expect that it would; for if the combination in question existed in our own case, it would be physically possible, and *physically manifest, therefore, in the bodies of others*

as well, and there would be no need to resort to analogy to prove it. As it is, the fact does not hold in the case from which the analogy is drawn. It must be remembered that the existence of other conscious beings is not in question now ; the only contention is, that it is not competent to *science* to affirm their existence, because to do so is to predicate facts outside and incompatible with the materialistic hypothesis. It is to maintain an inference respecting existences that never appear as physical phenomena ; in short, it is to assert a proposition of ontology, and such propositions, whether true or false, lie altogether beyond the materialistic hypothesis which constitutes the special and limited domain of physical science.

The ordinary practice and loudly-proclaimed boast of science forbid its recognition of facts unsupported by physical evidence, whatever else may be urged on their behalf. It is the legitimate pride of those who prosecute physical inquiries to confine themselves rigorously to physical considerations in their reasonings, and take account only of objects which reveal their presence to physical tests. To predicate the existence of facts which there are 'absolutely no means of perceiving,'—that is to say, which leave no physical trace whatever of their presence, and frame theories of the relations of these facts to physical processes which go forward as they would do without them, is an outrageous violation of the approved procedure of science which is loudly condemned when practised by others. Yet, it is exactly this course which Professor Clifford—who is accustomed to assert in unmeasured terms the supremacy of scientific facts and methods—describes himself as taking when he says,—

'I have absolutely no means of perceiving your mind.

'I judge by analogy that it exists, and the instinct which leads me to come to that conclusion is the 'social instinct, as it has been formed in me by generations during which men have lived together; and 'they could not have lived together unless they had 'gone upon that supposition.'¹

Suppose that in any other department of science it were proposed to admit facts, not only destitute of physical evidence, but for which no room was to be found in the place where they were said to occur, and that the evidence offered for their admission was 'an instinct,' 'a social instinct,' formed in the course of generations. We know how such a proposal would be scouted; that the social instinct would properly be dismissed as a vulgar error, and not be tolerated for a moment in support of a fact which had not a vestige of scientific evidence to sustain it.

It may be urged that this instinct must be a powerful factor in human affairs, since we are told that men 'could not have lived together unless they had gone upon that supposition.' Powerful indeed, if so; but it passes understanding how one holding Professor Clifford's opinions could have penned such a statement. For the very essence of his contention on this subject is, as we have seen, that physical facts go along by themselves without any interference from mental facts; 'the assertion that another man's volition, a feeling in his 'consciousness which I cannot perceive, is part of the 'train of physical facts which I may perceive, is,' he tells us, 'nonsense.'² But if men could not have lived together, unless they had gone upon the supposition that their fellows had minds, feelings in the consciousness

¹ "Body and Mind," p. 728 of the *Fortnightly Review* for Dec. 1874.

² *Ibid.*, pp. 728-29.

of others have interfered most powerfully with the train of physical fact. If it be replied, that the supposition would be influential only on its physical side,—that is to say, as a particular brain-change, then it yields no evidence of the existence of other minds, for the sake of which it was alleged. ‘Other minds must ‘exist,’ it is argued, ‘because men could not have lived ‘together unless they had thought so.’ But if their thoughts affected the result only as brain-changes, and not as thoughts proper, they lose all force as arguments for mind. Allow, therefore, to Professor Clifford’s argument the slightest force, and then feelings in the consciousness of others become factors in the train of physical events, physical continuity is broken, and ‘nonsense’ prevails.

The passage is, indeed, an egregious example of the *petitio principii*. For the argument runs thus:—‘I ‘come to the conclusion that other men have minds, ‘because I possess a social instinct, and unless other men ‘possessed them too, they could not have lived together.’ But social instincts are facts of mind, manifested, like all other facts of mind, by bodily movements alone. So that to assume social instincts, and use them as evidence for mind, is to begin the proof of its existence by assuming that it exists.

It is clear that the minds of others cannot be recognized by physical science on the ground of reasonings like this. And very obvious considerations seem to show that no evidence of their existence appreciable by science can possibly be forthcoming. For it is admitted that the feelings of others cannot themselves be perceived by any sense; certain bodily movements only are perceived, which are supposed to indicate feelings. It is admitted, further, that those move-

ments proceed with the strictest physical sequence ; in other words, that in the absence of feelings they would take place just as they do. It follows that mind leaves no trace of its presence in the movements by which alone it is revealed. What is this but to say that it is a pure supposition, without a single vestige of scientific evidence ? The only evidence science can have of anything is that it is or effects some change, some movement. So, and no otherwise, is the presence of anything manifested. Whatever effects no change, makes no sign in the material world, is, to physical science, non-existent. And it is the consistent conclusion of modern science, that mind effects no change in the material world. To affirm that, and still to maintain the presence of mind as a scientific fact, is a surprising inconsistency. Science has no more right to affirm the existence of human minds than to affirm the presence of invisible angels. And yet the most thorough-going advocates of science, who maintain that physical continuity is never interrupted, persist in asserting that minds are associated with bodies, and in treating the connection of the two as a scientific problem. Some, we have seen, think the case is met by denying to men the power of volition, but leaving them sensibility, and calling them *conscious automata*. No compromise could be more futile. There is no halting-place here. Consciousness gives no physical sign of its existence any more than the will. The evidence must be followed as far as it leads, if it is followed at all. The only legitimate conclusion for science to hold is, that human bodies are *mere automata*, destitute of consciousness as well as volition.

It is impossible that this astonishing inconsistency can prevail long in the scientific world. That it should

have prevailed for an hour among those who recognize that the physical continuity of man's nervous organism is never interrupted—that adventurers who have pushed so far on the precipitous path along which their evidence led them should have paused here, where no foothold exists—shows how the ablest minds may be held back from inevitable conclusions by extraneous considerations and the fear of consequences. They seem to shrink from the denial of consciousness as from a *reductio ad absurdum* of the reasoning which lands in such a consequence. Herein Des Cartes well merits the praise accorded to him by Professor Huxley, for he followed the argument to this very conclusion, when he maintained that animals are automata; the science of his day could not show him the daring leap which ought next to follow. It is instructive to observe the attitude of Professor Huxley towards this conclusion of Des Cartes :—

‘Though I do not think that Des Cartes’ hypothesis ‘can be positively refuted, I am not,’ he writes, ‘disposed to accept it. The doctrine of continuity is too ‘well established for it to be permissible to me to suppose that any complex natural phenomenon comes ‘into existence suddenly and without being preceded ‘by simpler modifications; and very strong arguments ‘would be needed to prove that such complex phenomena as those of consciousness first make their appearance in man. We know that, in the individual man, ‘consciousness grows from a dim glimmer to its full ‘light, whether we consider the infant advancing in ‘years, or the adult emerging from slumber or swoon. ‘We know, further, that the lower animals possess, ‘though less developed, that part of the brain which ‘we have every reason to believe to be the organ of

‘consciousness in man ; and as, in other cases, function and organ are proportional, so we have a right to conclude it is with the brain ; and that the brutes . . . have a consciousness which, more or less distinctly, foreshadows our own.’¹

Let us consider the argument of this passage. In the first place, the admission is made that there is not positive evidence to show that the lower animals are not automata. In other words, it is granted that the physiology of brutes accords with the supposition that they are. That being so, it should need arguments of extraordinary force to convince Professor Huxley that they are not, to induce him to take a course so unusual as to set aside a conclusion of physiology. What leads him to do so in this instance ? He alleges the doctrine of continuity as the reason, and he applies it thus. Such a complex phenomenon as human consciousness could not arise without having existed in simpler forms in the lower animals. Moreover, they possess in simpler forms that part of the brain which seems to be the organ of consciousness in man ; and as function and organ are generally proportional, we have a right to conclude that the consciousness of brutes is developed in proportion to the development of their brains. These two arguments for believing that the lower animals are conscious depend entirely on the assumption that men are conscious ; and we have seen that Professor Huxley’s only argument for concluding that the bodies of other men are conscious is that his own body is conscious. It follows that, independently of this, as we have shown, untenable assumption, Professor Huxley would hold the opinion of Des Cartes.

¹ “ On the Hypothesis that Animals are Automata,” *The Fortnightly Review*, Nov. 1874, pp. 573-74.

It is obvious that the doctrine of continuity has an alternative application to this case, of which no mention is made. Consciousness being supposed to be present in men, the doctrine of continuity compels us to ascribe it to brutes, in spite of evidence to the contrary, argues Professor Huxley. It would seem to be a sounder application of that doctrine to say,—As the evidence forbids us to ascribe consciousness to brutes, we are not entitled to assume that it is possessed by men. At least, it must be admitted that in choosing between these alternatives, we ought to be governed by the scientific evidence we have for ascribing consciousness to men. And on this point let Professor Huxley himself be our witness. In the same paper, when anticipating the objection that ‘the conclusions deduced ‘from the study of brutes are applicable to man,’ he writes :—

‘It is quite true that, to the best of my judgment, ‘the argumentation which applies to brutes holds ‘equally good of men.’¹

In accordance with this, the whole drift of the paper before us is to prove that consciousness is never the cause of physical change, but that men, like brutes, are *conscious automata*, without any power to modify the course of physical events. But since volition is thus consistently denied, why is not the conclusion of Des Cartes maintained in its integrity, and pure automatism ascribed to men and to brutes? What evidence have we of consciousness in them, that we should leave them in possession of that, after we have denied to them the power to cause physical change?

Let us hear Professor Huxley again, in language already quoted :—

¹ *Ibid.*, p. 577.

‘It must be premised, that it is wholly impossible absolutely to prove the presence or absence of consciousness in anything but one’s own brain, though, by analogy, we are justified in assuming its existence in other men.’¹

In other words, there is not a vestige of evidence that other men are conscious, on which science can lay hold, for the statement that there is nothing to prove the absence of consciousness, any more than its presence, is equally true of angels and fairies. Scientific men do not usually leave this loophole of possibility where there is not a trace of positive evidence.

Our examination of the passage lately quoted from Professor Huxley brings us, then, to this; although the conclusion that the lower animals are pure automata is supported by the physiological evidence, he rejects it on the strength of arguments drawn from the assumption that human bodies are the seats of consciousness. But that assumption is admitted to be equally destitute of physiological evidence; indeed, Professor Huxley distinctly maintains that in this matter ‘the argumentation which applies to brutes holds equally good of men.’ It is obvious, then, that they, as well as brutes, ought, from the scientific point of view, to be regarded as mere automata. And this is granted implicitly, since consciousness is denied the power to cause physical change; for that is to deny it all powers to give physical evidence of its existence.

In regard to this question, then, Des Cartes argued correctly from the scientific evidence when he maintained that the lower animals are mere automata, but he failed to recognise that the same reasoning applies equally to men. Professor Huxley recognises that

¹ *Ibid.*, p. 565.

men and brutes are on the same footing in this respect, and recognises also the cogency of Des Cartes' reasoning; but, recoiling from the only legitimate conclusion, that, scientifically speaking, men as well as brutes are mere automata, he endeavours vainly to hold aloof from it by resorting to the impossible compromise that they are both *conscious automata*.

§ 17. CONSCIOUSNESS NOT A FUNCTION OF THE NERVOUS ORGANISM.

If further reasoning on this point were not superfluous, an argument against the production of consciousness by the human brain might be drawn from one of the considerations lately quoted from Professor Huxley's paper in favour of its existence in the lower animals—

'We know,' he writes, 'that the lower animals possess, though less developed, that part of the brain which we have every reason to believe to be the organ of consciousness in man; and as, in other cases, function and organ are proportional, so we have a right to conclude it is with the brain; and that the brutes . . . have a consciousness which, more or less distinctly, foreshadows our own.'¹

The argument here is as follows:—Part of the human brain is the organ of consciousness, and the brains of the lower animals have similar parts. As, therefore, function and organ are generally proportional, it may be inferred that consciousness is developed in animals in proportion to the development of their brains. Now, the brain—let it be remembered—is not an organ quite *sui generis*; it is only the highest centre, or group of

¹ *Ibid.*, p. 574.

centres, of a nervous organism which has many inferior centres, similarly constituted in essential respects. Therefore, this perfectly fair argument that, as compared with men, animals must be conceived to have a consciousness developed in proportion to the development of their brains, will carry us to the further inference, that the inferior centres of each nervous organism must be conceived to be the seats of a consciousness developed in proportion to their development. Whereas it is established, or supposed to be established, that consciousness does not arise in any of the inferior nervous centres, but only in a certain part of the brain. On this point Mr. Herbert Spencer makes the following statement:—

‘It does not follow, as it at first seems to do, that ‘feelings are never located in the inferior nervous ‘centres. On the contrary, it may well be that in ‘lower types the homologues of these inferior centres ‘are the seats of consciousness. The true implication ‘is that in any case the seat of consciousness is that ‘nervous centre to which, mediately or immediately, ‘the most heterogeneous impressions are brought; ‘and it is not improbable that in the course of nervous ‘evolution, centres that were once the highest are sup- ‘planted by others in which co-ordination is carried a ‘stage further, and which thereupon become the places ‘of feeling, while the centres before predominant be- ‘come automatic.’¹

According to this passage, any nervous centre is fit, as far as its constitution goes, to be the organ of a more or less developed consciousness, but whether it is so or not depends on whether the nervous organism to which it belongs has or has not a superior centre.

¹ *Principles of Psychology*, vol. I., p. 105.

Either, then, we must admit here a complete violation of the rule that function and organ are proportional, since the production of consciousness depends on something else than a suitable organ, or we must hold that it is incorrect, speaking scientifically, to call consciousness a function of any part of the nervous organism. Plainly, the last is the only legitimate conclusion for science to adopt.¹

It may be well to remind the reader once again, that it is not the existence of other conscious beings which is in question now, but only whether physical science supplies evidence of their existence. It is the confounding of these totally distinct questions by all parties which has been the constant source of fallacies and disputes among the advocates and opponents of science. What evidence other than scientific we possess respecting the minds of others will be discussed hereafter. At present, let us follow the guidance of physical science on the matter a little further. Perfectly legitimate, as we have seen, is the conclusion of its highest authorities, that consciousness is never the cause of any physical change ; yet they ascribe it, as a fact of their science, to men and to many of the lower animals; and not only so, but they localize its manifestations, and confine its seat to a particular portion of the brain. But to say that consciousness is never the cause of physical change, is equivalent to saying that all the physical changes of the body proceed exactly as they would do if there were no consciousness. On what evidence, then, do they localize consciousness here rather than there, or affirm its presence anywhere ? The facts adduced to prove that the brain alone is the seat of consciousness (for our argument does not require

¹ Cf. Mr. Lewes' view, referred to in Bain's *Emotions and Will*, pp. 590-1.

us to decide the more debatable question as to the particular region of that aggregate of centres to which consciousness is confined), are, it will be remembered, of this sort. External expressions are never felt as sensations unless they reach the brain; and when they do arrive there, are always ascribed to the extremity of the nerve which brings them, though the impression may have originated nearer to the point of feeling. If, *e.g.*, the optic nerve be severed, light falling on the eye does not produce vision; but flashes of light are often experienced when the eye has been destroyed, through mechanical irritation of the end of the nerve leading to the sensorium. And after amputations, similar irritations of the cut nerves excite sensations referred to the lost fingers or toes; but if the nerves connecting a limb with the brain be severed anywhere above the limb, it loses all sensibility.

Professor Huxley states the case with his customary clearness and precision:

‘However near the brain the spinal cord is injured, ‘consciousness remains intact, except that the irritation ‘of parts below the injury is no longer represented by ‘sensation. On the other hand, pressure upon the ‘anterior division of the brain, or extensive injuries to ‘it, abolish consciousness. Hence, it is a highly probable conclusion, that consciousness in man depends ‘upon the integrity of the anterior division of the ‘brain, while the middle and hinder divisions of the ‘brain, and the rest of the nervous centres, have nothing to do with it. And it is further highly probable, ‘that what is true for man is true for other vertebrated ‘animals.’¹

¹ “On the Hypothesis that Animals are Automata,” *Fortnightly Review*, November, 1874, pp. 565-6.

Many curious facts are next adduced to show that if any portion of the spinal cord of a living vertebrated animal be separated from that anterior division of the brain, which is the organ of consciousness, although such portion ceases to be conscious, and the will cannot influence it, it is still 'the seat of extremely remarkable powers.' If, for instance, a man's spinal cord was divided, by some accident, in the middle of the back, the man would 'be devoid of sensation in his legs, and 'would not have the least power of moving them. But 'if the soles of his feet were tickled, the legs would be 'drawn up, just as vigorously as they would have 'been before the injury. We know exactly what happens when the soles of the feet are tickled; a molecular change takes place in the sensory nerves of the 'skin, and is propagated along them and through the 'posterior roots of the spinal nerves, which are constituted by them, to the grey matter of the spinal 'cord. By means of that grey matter the molecular 'motion is reflected into the anterior roots of the same 'nerves, constituted by the filaments which supply the 'muscles of the legs, and travelling along these motor 'filaments, reaches the muscles, which at once contract, 'and cause the limbs to be drawn up. . . .

'Thus it follows that the grey matter of the segment 'of the man's spinal cord, though it is devoid of consciousness, nevertheless responds to a simple stimulus 'by giving rise to a complex set of muscular contractions, co-ordinated towards a definite end, and serving 'an obvious purpose.

'If the spinal cord of a frog is cut across, . . . the 'frog behaves just as the man did. The legs are utterly 'paralyzed, so far as voluntary movement is concerned; 'but they are vigorously drawn up to the body, when

‘any irritant is applied to the foot. But let us study
 ‘our frog a little further. Touch the skin of the side
 ‘of the body with a little acetic acid, which gives rise
 ‘to all the signs of great pain in an uninjured frog.
 ‘In this case there can be no pain; . . . never-
 ‘theless, the frog lifts up the limb of the same side,
 ‘and applies the foot to rub off the acetic acid; and,
 ‘what is still more remarkable, if the limb be held so
 ‘that the frog cannot use it, it will, by and by, move
 ‘the limb of the other side, turn it across the body,
 ‘and use it for the same rubbing process. It is impos-
 ‘sible that the frog, if it were in its entirety and could
 ‘reason, should perform actions more purposive than
 ‘these; and yet we have most complete assurance that,
 ‘in this case, the frog is not acting from purpose, has
 ‘no consciousness, and is a mere automatic machine.’¹

Professor Huxley adduces other examples, equally remarkable, of distinctly purposive actions performed without consciousness by animals and men; and we can all testify that instances in point are not confined to cases of extraordinary accident or special experiment. Des Cartes refers to the throwing forward of the hands to save the head when one falls, which is obviously purposive, and often, if not always, unconscious; and so is the closing of the eye when danger, or the semblance of danger, approaches it; in this case, it is often impossible to keep the eye open by a determined exertion of the will. Illustrations to the same effect are furnished by habitual actions, like reading, and practising instrumental music. At first, in learning to read and to play music, distinct acts of consciousness and volition are required at every step, but habit enables the reader and

¹“On the Hypothesis that Animals are Automata,” *Fortnightly Review*, November, 1874, pp. 565-66.

player to perform the most complicated movements of eye and throat and hand while consciousness is engaged with something else.

As we find, then, that scientific authorities who maintain that consciousness is never the cause of physical change, draw a very marked distinction between actions that are accompanied, and actions that are not accompanied, by consciousness, it is important to ask them wherein the distinction consists, and whereby consciousness manifests its presence, since it never causes physical change ?

The scientific *rationale* of this distinction is based on that limitation of consciousness to a certain region of the brain which has just been mentioned, and of which a full account is given in Dr. Carpenter's work on *Mental Physiology*, from which extracts have been made (pp. 19-22). The explanation amounts to this:—All nerve-waves which reach the anterior portion of the brain are represented in consciousness; but if, from any cause, such as the preoccupation of those anterior centres, or their injury, nerve-waves fail to reach them, those waves are not represented in consciousness, but they will give rise, nevertheless, by their transmission through inferior centres, to movements which may be elaborate and purposive. Habitual actions, in which certain nervous stimulations have repeatedly been followed by particular movements, take place with increasing facility through the inferior nervous centres concerned, till they cease to pass on to the sensorium, or seat of consciousness; but nerve-waves, in regard to which no such ready-made facility exists, find their way to the sensorium; whereby they not only become represented in consciousness, but are brought into connection with nerve-waves from other parts of the body,

especially from the cerebrum, the supposed organ of Ideation; and by this commingling of waves the resultant motor waves are at length determined and despatched. This is the physical counterpart of an action taken after deliberation.

Professor Clifford describes the process thus:—

‘There are then two different ways in which a message may go from the eye to the hand. It may go to the optic ganglion and then almost straight to the hand, and in that case you do not know much about it—you only know that something has taken place, you do not think that you have done it yourself; or it may go to the optic ganglion and be sent up to the cerebral hemispheres, and then be sent back to the sensory tract, and then on to the hand. But that takes more time, and it implies that you have deliberated upon the act.’ . . . Thus—‘if it is necessary to deliberate about the action, to call in the exercise of the will the message goes round the loop line.’¹

It is immaterial to our present enquiry that the region of the brain to which consciousness is assigned should be precisely ascertained and mapped out; we learn all that it is important for us to know when we are told, that in cases where consciousness is supposed to arise, nerve-waves traverse certain portions of the brain which they do not visit when purely automatic actions are performed. That is the distinction of which we are in search,—the distinction between conscious and automatic actions expressed in terms of physical change. Now that there are such physical distinctions between actions,—that the nerve-waves concerned in effecting some traverse this special region of the brain, which is not traversed in the case of others, is a strictly

¹ “Body and Mind,” *The Fortnightly Review* for Dec. 1874, pp. 720, 721.

scientific conclusion, resting upon proper scientific evidence; but it is quite otherwise with the statement, that the nerve-waves which traverse this particular region of the brain are attended with consciousness. We may well ask the authorities who teach us that consciousness never causes physical change, how they know that it accompanies physical change? Since, confessedly, these very changes would have taken place just the same in the absence of consciousness, how is it possible that they, or any changes which they produce, should yield evidence of its presence?

Professor Huxley tells us that to touch the side of an uninjured frog with a little acetic acid 'gives rise to all the signs of great pain,' but that if a frog be so treated after having been deprived of the anterior portion of its brain, no signs of pain occur, although the frog takes precisely the same measures to rub the acid away which it would have taken if uninjured. In the first case, according to the explanation just given, the anterior portion of the brain is traversed by nerve-waves; in the second case, it has been removed; and that difference reveals itself externally in signs of pain in the first case which are wanting in the second. That proves that the anterior portion of the brain is the part of it concerned in the production of the signs of pain—the contortions, which, of course, are simply movements. Of the pain itself, as distinguished from the signs of it, there is no physical evidence whatever. If there were, if the contortions were produced by the pain proper, the pain would be the cause of physical changes, which is contrary to the supposition. If it be replied that the contortions are produced, not by the pain *quâ* pain, but only by the physical concomitant of the pain in the supposed organ of consciousness, that is

granted, but what follows? that it is the physical concomitant alone to which the contortions testify, that they are signs of a particular brain change, and not signs of pain. The point in dispute is whether or not that brain change is attended with pain; and since it is admitted that the contortions would have occurred in either case, they do not yield a tittle of evidence for the pain.

It is hardly necessary to say that the argument holds equally good when applied to men; that its force would not be diminished in the slightest degree by the most earnest protestations an individual could make that he was acutely conscious of this feeling or that. For of what would his protestations consist? Of vibrations of air emitted by his vocal organs, and produced by the contractions of numerous muscles, set in motion by a series of nerve-waves, determined especially by the particular wave in the brain which corresponded to the acute sensation. But, as before, that acute sensation could not itself excite the faintest pulse of nerve-movement, or augment the amount of nerve-movement, or affect its direction in the smallest degree, without rupturing physical continuity, and producing physical change. Given the physical counterpart of the sensation, and the human automaton is so perfectly constituted, that all the consequences mentioned would follow, down to the vocal asseverations of feeling; but inasmuch as all this would happen irrespective of feeling, its occurrence would be no indication of feeling.

It is but putting this conclusion in another shape to say, that if our chemists and biologists had such complete command over their departments of science that they could construct in their laboratories human bodies which should be perfect in all their parts as material

machines, so that every physical function should proceed as in living men, those purely material machines of human construction would establish their claim to be regarded as living men by every test we could apply to them, would be absolutely indistinguishable, by ordinary observation or scientific experiment, from the beings whom we regard as endowed with the marvellous faculties of intellect and emotion. If the brains of these man-made machines were properly formed and nourished, they would manifest all those signs of intelligence and feeling which are exhibited by men of remarkable genius. For in no case are those signs anything more than varieties of movement, and it is the consistent conclusion of physical science that movements are determined exclusively by physical change.

§ 18. LOGICAL CONSEQUENCES OF REALISTIC SCIENCE.

Those accustomed to the strict reasoning of science will be the last to deny that these results follow inevitably from the legitimate scientific conclusion that consciousness is never the cause of physical change; nor can they object to the consistent application of the principle which is their legitimate boast, that they are entitled to recognise only such facts as have the warrant of physical evidence. Facts *extraphysical*, if there be such, are, from the scientific point of view, inadmissible, non-existent. We must hold our scientific friends here to this strict procedure, which they are accustomed to observe themselves, and impose on others, with healthy rigour. Since, then, in the instance just mentioned, no verbal assurances from the individual under experiment that he felt pain would afford the slightest scientific evidence of the fact, the


existence of the pain must, from the scientific point of view, be altogether disallowed.

It is obvious that the consequences to be drawn from this conclusion are wide as the world. From the scientific point of view, the individual in question never feels pain, never feels anything; from birth to death he will be a mere automaton, and yet he will act precisely as if he possessed the intelligence ascribed to men; and if he has a brain of superior capacity, he will act as if governed by superior intelligence. He will laugh, he will cry, he will talk, may hold earnest conversation with friends, repeat accurately the proofs of propositions of Euclid, and give expression to the most ardent affection or the strongest indignation, but to science he has no intelligence or feeling, no pleasure or pain. There is no evidence of these which science can weigh; all his actions are fully accounted for without them; and, therefore, to science they are inadmissible, non-existent; and we must deny the right of its disciples to violate its avowed procedure by recognising more than a mere automaton in this, or in any human being.

No further argument is required to show that, in the view of physical science, the entire human race must be an aggregate of unconscious automata, whose varied and eventful history, commonly regarded as a stage for the display of countless forms of intelligence and passion, has, in fact, consisted exclusively of the movements of material atoms governed by mechanical laws; so that even if mind and its stormy emotions had been present, they could not have affected one iota the actions of a single human being, but the intercourse and conflicts of individuals, classes, and nations would have been precisely what they have been, whether or

not these eager activities of our race have had what Professor Huxley calls 'symbols in consciousness.'

Young men and maidens have plighted vows of love, and families have arisen, the parents and children seemingly united together by dear ties of affection, their sorrows alleviated by the happiness of home; but however that be, it is the incontestable conclusion of science that all their actions, their fireside gatherings and their disputes, their language, their gestures, their looks, would have been exactly the same in the absence of all joy and sorrow and love. Nation has risen against nation, and wars have been waged, attended, it has been supposed, with frightful miseries, and calling forth extraordinary genius and heroism; but science teaches that the actions which have been regarded as indications of these sufferings and high mental qualities must have occurred irrespective of all such appalling and sublime accompaniments; as Professor Clifford expresses it,—'the physical facts go along by themselves'; and science, unable to show a particle of evidence for anything not physical, is bound to disallow all beside. The same holds good when we rise into a region still higher. The course of history, and still more the lives of individual men, have been profoundly influenced by religion. Sanctuaries have been reared, congregations have stately assembled through many ages, in many lands; the resources of language have been taxed to give expression to men's thoughts of God and immortality, and to their feelings of penitence and worship. This is the prevailing opinion; but whether it be true or false, our leading scientific authorities must discard their opinions unless they allow that these supposed indications of religious faith and emotion would have been produced by human bodies destitute of all thought




and feeling; for the buildings, the assemblies, the songs and prayers, the words of warning, counsel, comfort and promise, have been physical facts, whose occurrence was fully accounted for by brain-changes of a peculiar order of which certain organisms have been the seat; therefore, scientifically speaking, these supposed embodiments of religious ideas are signs of those brain-changes alone, and are *not* signs of anything which bears the remotest resemblance to religion.

Among the most remarkable and indubitable facts of history is this,—that the short life and violent death of a Jewish Peasant eighteen centuries ago have exercised an unrivalled influence on the lives of multitudes of men, and on the subsequent history of the civilized world. He called into being the Christian Church, which has made a mighty mark on the material world, and has always looked to Him as the object of its imitation and worship; and all the resources of religious language have been expended upon Christ. But the Person who has left such abundant and ineffaceable traces of His influence on human character and history in many lands, has wrought them (not to raise here the question of the supernatural) through the instrumentality of bodily acts and vocal sounds which were orderly sequences of physical change; all the results which have followed have been, therefore, links in the unbroken chain of physical events, and—so science is bound to maintain—have not been affected in the least by the mind or heart of Christ. Christ has not influenced men's deeds by first moving their hearts; but every outward effect which He has wrought, even the hold which the story of His sufferings has taken on ten thousand hearers, has been strictly traceable to physical causes, and wholly independent of thought

or feeling. The New Testament would have been written just the same, and all the literature of the world produced and read, without serving to convey a single thought to a single mind.

The commiseration felt for the blind and the deaf is due to their supposed lack of sensations invaluable for man's guidance and enjoyment in life; but, according to science, nothing which we see or hear has the smallest effect upon our actions. The only way in which our senses can direct us is by sending nerve-waves to the sensory-ganglia which powerfully affect our motor impulses; and so it is only the want of certain of these waves, and not the want of sensations, which renders the blind and the deaf less able than others to perform their parts in life.

It is very far from superfluous to remind ourselves by such examples, which might, of course, be indefinitely multiplied, of the inevitable issues to which physical science stands committed. It is useful, not by way of discrediting these conclusions, which are perfectly valid within the limits of phenomena, but to help us to that estimate of their real character of which we are in search. And it is clearly impossible for those most consistent authorities of science, who teach that consciousness is never the cause of physical change, to dispute that the actions, words, and gestures of every individual of the human race would have been exactly what they have been in the absence of mind; had mind been wanting the same empires would have risen and fallen, the same battles would have been fought and won, the same literature, the same masterpieces of painting and music would have been produced, the same religious rites would have been performed, been the same indications of friendship and affection



given. To this absurdity physical science stands committed. The conclusion hence seems equally irresistible, that physical science possesses no evidence whatever of mind, and that her title to admit its existence must, on her own canons, be denied.

It is affirmed that the consequences just drawn are strictly necessary deductions from the materialistic conception of the universe consistently interpreted by physical science. Pushed to its proper logical issues, that conception leaves the universe without thought or feeling anywhere. Materialism must bear the burden of that incredible consequence. Therefore, the disciples of physical science are, as such, disqualified from recognizing a single fact of consciousness; when they do so, they act in defiance of the evidence by which physical enquiries are guided.

§ 19. NO MODIFICATION OF PHYSICAL EVENTS BY INTELLIGENCE, DIVINE OR HUMAN.

The conclusion at which we have arrived receives important support from the much-debated question as to the evidences of design in the material universe, as we will now proceed to show. The admirable adaptations of nature have been appealed to for ages as proofs that intelligence contrived them, and the immense accessions recently made to natural knowledge have greatly multiplied the numbers of supposed indications of design, and have furnished, if possible, still more striking examples of it. And yet, many consider that the progress of science has weakened, if it has not superseded, the argument so forcibly stated by Paley. For the ever-accumulating stores of facts have undoubtedly gone to show that every physical effect has had

physical antecedents adequate to produce it, and of which it is the simply inevitable result, and if so, no room seems left anywhere for the interposition of a directing intelligence. In other words, the new evidence has helped to fill up the gaps where it appeared before that presiding wisdom might conceivably have stepped in. This twofold tendency of modern science—on the one hand, to multiply the evidences of design, and on the other, to supply physical explanations of the facts,—is exhibited in an eminent degree in the vast extension of our knowledge of living forms, accompanied, as it has been, by the theory of evolution, which seems to show how they have arisen. To take one illustration from the writings of Mr. Darwin: the astonishing contrivances by which, as he shows, the fertilization of many species of orchids is effected cannot be surpassed as indications of intelligent design, and yet these very contrivances he urges as a powerful argument for ‘the origin of species by means of natural selection.’

No doubt a second Paley would find new evidences of design in the exquisite adjustments of materials and forces, in virtue of which results so strikingly purposive seem to accomplish themselves; as machinery which turned out watches complete, without a touch from anybody, would argue still greater skill in its constructor than that of the watchmaker who puts all the parts of a watch together with his hands. ‘The doctrine of natural selection,’ it has been well said,¹ ‘starts with the recognition of an internal formative force, which is hereditary.’

¹ Professor Cleland’s address to the Anatomy Section of the British Association, delivered at Bristol, 1875, and reported in *Nature* for September 9th, 1875.

‘Is it more of an assumption,’ Professor Cleland is represented as asking, ‘to declare that the changes are all accidental, and made permanent by accident of external circumstances, or to consider that it has been the law proper to this force to have been adequate to raise forms . . . from the simple to the complex, acting through generations on the face of the earth, precisely as it acts in the evolution of a single egg into an adult individual? . . . I ask if, in the range of forms which furnish at the present day an imperfect key to the ages which are past, there is not exhibited a development comparable, in its progression to definite goals, with what is shown in the life of a single plant or animal?’

But these considerations do not directly concern us now; the matter important to our present inquiry is this, that all the accessions to our knowledge of nature point to the conclusion that every physical fact is capable of complete physical explanation; that nothing takes place in the universe of dead or living matter which is not the inevitable consequence of the surrounding physical conditions, so that it is wholly superfluous, and therefore illegitimate, to suppose that the feeblest impulse from without ever disturbs the balance of the physical situation. As Professor Huxley expresses it—

‘Any one who is acquainted with the history of science will admit that its progress has, in all ages, meant, and now, more than ever, means, the extension of the province of what we call matter and causation, and the concomitant gradual banishment from all regions of human thought of what we call spirit and spontaneity.’¹

¹ “On the Physical Basis of Life,” *The Fortnightly Review*, February, 1869, p. 143.

It is obvious that the reasoning pursued in these pages affords the most powerful support to this conclusion, by showing that it holds good even of the brain of man, supposed, till lately, to yield incontestable proof of the direct power of mind over matter, and forming the very citadel of 'spirit and spontaneity.' If mind operates there, it may operate elsewhere; but if its influence over our own bodies must be denied, it is vain to look for its action in any region of the universe within reach of our powers. If *we* become part, then everything becomes part of 'the great series of causes and effects which, in unbroken continuity, composes that which is, and has been, and shall be—the sum of 'existence.' Therefore our contention that physical science, finding no evidence of volition or of consciousness in the bodies of men, is bound to disallow that they have minds at all, affords the strongest support to the argument ordinarily urged against design, that since the most striking examples of contrivance in nature may be shown to be brought about entirely by physical causes, there is no room to suppose that intelligence interposes in such cases to carry out its plans; in other words, all traces of Divine interference with the course of nature being wanting, science is unable to recognise the Creator's agency, except in physical laws. Clearly this reasoning is more than in accord with the line of argument we have pursued; in all essential respects it is the same; the conclusion urged in these pages being the consistent and inevitable application to the brain of man of the very reasonings which science opposes to the notion of perpetual Divine interventions.

To illustrate this point, let us compare examples of contrivance drawn from external nature and from the

works of man. The development of a plant from a seed presents a long series of seemingly purposive acts, all tending, or tending in the main, to build up the complete structure, and produce new seeds embedded in the fitting nutriment of the fruit. If intelligence presided over the evolution, interfering at every stage to determine its direction, the changes which take place could not conduce more exactly to the result than they do. Let the seed find its way into the soil by what seem chance influences, among which, oftentimes, are elaborate devices to facilitate its transportation, and such is the reciprocal adaptation between the seed and its environment, that it germinates, emerges as a tender blade above the soil, and, drawing materials from earth and air, builds up its fabric from them, and develops stem and leaf and flower and fruit. But is this marvellous result secured by the interference of a directing intelligence with the physical changes taking place in the plant? The testimony of science is decisive against that supposition, and all goes to show that the matured plant is the simply inevitable product of the network of materials and energies operating together in the seed and its environment. Let those normal conditions be present, and their complex interaction cannot but issue in the perfect plant; interference would not help, but hinder the result. Let the following inimitable paragraph from Professor Huxley's 'Lay Sermon' on 'The Origin of Species,' describe how the case stands in regard to animal development:

'Examine the recently-laid egg of some common animal such as a salamander or a newt. It is a minute spheroid in which the best microscope will reveal nothing but a structureless sac, enclosing a glairy fluid, holding granules in suspension. But

‘strange possibilities lie dormant in that semi-fluid globule. Let a moderate supply of warmth reach its watery cradle, and the plastic matter undergoes changes so rapid and yet so steady and purposelike in their succession, that one can only compare them to those operated by a skilled modeller upon a formless lump of clay. As with an invisible trowel, the mass is divided and sub-divided into smaller and smaller portions, until it is reduced to an aggregation of granules not too large to build withal the finest fabrics of the nascent organism. And then it is as if a delicate finger traced out the line to be occupied by the spinal column, and moulded the contour of the body; pinching up the head at one end, the tail at another, and fashioning flank and limb into due salamandrine proportions, in so artistic a way, that, after watching the process hour by hour, one is almost involuntarily possessed by the notion, that some more subtle aid to vision than an achromatic would show the hidden artist, with his plan before him, striving with skilful manipulation to perfect his work.’¹

But does Professor Huxley mean to suggest that this wonderful result is accomplished by the interpositions of such an invisible artist? His words, lately quoted, furnish the reply. The progress of science, he says,—

‘Now, more than ever, means the extension of the province of what we call matter and causation, and the concomitant gradual banishment from all regions of human thought of what we call spirit and spontaneity.’

That is to say, scientifically speaking, the animal and the plant are simply and exclusively products of physical

¹ *Lay Sermons, &c.*, p. 286.

change, the proper effects of a long series of antecedents succeeding one another with unbroken regularity.

And now, how does the case stand in regard to such a product of human contrivance as a watch? A watch is a combination of materials and forces so arranged that certain of its movements measure the time. But that combination, so eminently purposive, is as entirely the result of regular physical sequents as the evolution of an animal or a plant, as the fall of a stone. It is true that, prominent among the physical causes which have produced the watch, is the manipulation which its parts have received by human hands. But that manipulation implied no interference with physical causation, for if the series of sequents be traced backwards from the watchmaker's hands through the muscles and nerves of his arms, and thence to his brain, and thence again to the nourishment which was a main condition of the brain's activity, the physical changes at every stage and place would—as has been fully shown—occur with perfect regularity—nowhere a break of physical continuity filled up by a psychical link; nowhere, therefore, a bending of the course of the operations occasioned by intelligent design. Scientifically speaking, the watch, precisely as the animal and the plant, is a product of strictly physical causes operating without interference.

But it may be asked, 'Is not a watch the result of 'a watchmaker's design to produce it, without which it 'would never be made? and is not a design a mental 'fact?' The reply is, design does not contribute to the production of the watch as a mental fact. But there is some particular brain change or condition which is regarded as the physical equivalent of the mental fact design, and this, which is itself a regular

consequent of anterior physical changes, is an indispensable physical antecedent of the watch. This brain change or condition, supposed to correspond to design, is, of course, as entirely physical as all the other antecedents of the watch ; it consists of the movements of matter like the changing positions of the arms and fingers, and contributes to the result in a way as purely mechanical. The mental fact design contributes nothing to the result, which, therefore, would take place as it does if the mental fact were away ; which is why we affirm that physical science has no right to recognize the mental fact.

Therefore, if we pursue a purely physical enquiry into the production of a watch or any other work of man in the same way in which such an enquiry is pursued into the production of a plant or an animal or any other work of nature ; that is to say, if we trace back, in each case, the series of antecedents of which the watch and the plant or animal are resultants, we find that in all cases alike the physical series is complete, or defective only through our imperfect analysis. At every point, consequent fits and follows antecedent in strict accordance with physical law. This holds good of the works of man exactly as it does of the works of nature. The circumstance that, in the case of human works, certain antecedents in the brain are believed to be accompanied by facts of consciousness and intelligent purpose, is not pertinent to the physical enquiry, because these facts are not links in the physical chain, and so do not in any way affect the physical result. As a question of physical analysis, there is no room for the operation, or need for, or evidence of, the presence of intelligence in the case of the watch, any more than in the cases of the animal and the plant.

It may be urged that in constructing a watch, as in countless other operations, man certainly interferes with the course of nature in order to serve his own ends. Except for his purpose to measure the time, the metals and glass now associated together to compose the watch would have continued apart, subject to other conditions, and links in other series of sequents. Man, therefore, it may be said, invades and alters the physical situation, which we have no evidence that Divine Intelligence ever does. This objection has force only because, by a strange misapprehension, we are accustomed to regard man as outside nature, to suppose which is, of course, to make all his actions seem invasions of nature. On the same principle, any number of invasions of nature might be made out, with which man has nothing to do.

Suppose, for example, a large stone, loosened by frost and thaw from a position on a hill side, which it has occupied for ages. It rolls down the slope, starting other stones on its way, all of which injure, more or less, the vegetation among which they pass—that is to say, affect the physical changes taking place in the disturbed plants. Suppose that at last all the stones fall into a lake at the bottom, and there originate different series of intersecting waves. In this case, the parallel sets of physical sequences taking place beforehand in the plants, in the stones, in the air, and in the water, are suddenly interfered with, and altered by the descent of the stone.

But is this an invasion of nature? Obviously it is so only if we isolate the little group of objects in question as they were before the stone fell, and regard the stone as an outside agent. But when we embrace the entire set of facts concerned (and any limitation of them

is quite arbitrary and misleading), there is no interference with nature at all : for the stone lay where it did in absolute obedience to physical causes ; the frost and the thaw, also, were regular physical occurrences, so was their loosening of the stone, so was its descent, and all the accompaniments of its fall. In a word, the fall and its attendant circumstances were as strictly the product of the collocation of materials and forces there present, as was the condition of things before it happened.

It is precisely the same when a watch, or anything else is made by a man. If we choose to regard the watchmaker as outside the world of nature from which he draws his materials, his re-arrangement of them will of course seem an interference with nature. But that limitation of view is quite illegitimate scientifically ; and directly we comprehend the man in our conception of nature, as well as the materials of the watch, his action on those materials, and their positions in the watch, are seen to be as strictly the resultants of the physical conditions present, as their positions in the metallic ores in which originally they were embedded.

In like manner, if we chose to isolate a plant in our thought, the sunshine, wind, and rain, affecting it from without, will seem interferences with its organism ; but if our thought embraces the environment as well as the plant, every apparent interference will vanish.

We conclude, therefore, that the works of man exactly resemble the works of nature in their complete subjection to physical causation ; or, to speak more accurately, we conclude that, to physical science, man is in the fullest sense a part of nature, and all his works natural productions as much as shells and clouds, effected by bodily movements governed altogether by physical causes, and incapable of the slightest modification by

his directing intelligence. For those who believe in the constant interference of Divine intelligence with the natural course of events, it is perfectly consistent to hold that human intelligence also modifies their course, in this direction and in that. But it is equally clear, that the same arguments which banish design from external nature, by showing that physical causes are adequate to account for its supposed productions, exclude all the evidences of human intelligence, and compel us to believe that every work of man is also solely the effect of physical causes. In other words, if we hold that the natural course of events admits of any interference by Intelligence, we leave room for the purposive interpositions of the Creator, as well as for those of man ; but if we maintain that it would contradict all our experience of nature to suppose that the Creator steps in to alter its course, we must not concede to the mind of man the slightest power to modify events. Either of these two propositions may consistently be held ; but we cannot hold both, and apply each at our pleasure, cannot assert the physical impossibility of the Creator's interference, while we freely ascribe human productions and contrivances to the intelligence of man. Yet this gross inconsistency is of common occurrence in scientific reasonings. It is constantly forgotten that if physical causation reigns alone in external nature, it follows by implication that men are mere automata. To evade the full force of this conclusion, by calling men *conscious* automata, has been shown to be scientifically unjustifiable. We may go farther. If the natural course of events is never interfered with by intelligence, there is no room at all for the exertions of human minds, but for creative design there is still abundant scope. For if physical

causation be adequate to the production of the ordered universe with its countless contrivances, it would seem that the skill and foresight necessary in the first instance to render it adequate, and effect such an exquisite balance of materials and forces, must have been vastly greater than if perpetual re-adjustments were required to secure the result. And it is quite open to us to suppose that this Infinite Intelligence was applied beforehand in framing the universe instead of operating continuously afterwards; but no such supposition can be made respecting the mind of man, which emerges, or seems to emerge, amid the interminable iron meshes of physical causation, too late, if otherwise able, to fore-ordain that they shall produce watches or steam-engines, or anything at all, and incapable of diverting physical sequences by one hair's breadth from their original predestined course. It follows that all the watches, and steam-engines, and other so-called marvels of human ingenuity, if products of intelligence at all, are, on the scientific view, results of the Creator's skill, in the same sense, and to the same extent, as flowers and butterflies, the universe of stars, and all the furniture of heaven and earth. Thus the scientific conclusion that Divine Intelligence never interferes with the natural course of events, not only denies by implication to the mind of man all power over them, but compels us to see in the so-called triumphs of his mind only the marks of original creative design, if design is acknowledged at all. This result is a precise reversal of the notion generally entertained. It is commonly supposed that physical science tends to banish Divine Intelligence from the universe, and to exalt the achievements of the mind of man. But, in fact, the very conclusion of science which denies Divine

interference with the course of events, reduces the human intellect to an absolute cipher, and lays all its fancied triumphs at the feet of the Creator, along with the other marvels of nature, great and small; unless the Creator Himself be denied, and then Intelligence is banished from the universe altogether.

§ 20. RESULT OF THE ENQUIRY.

Here we terminate our lengthened enquiry into the account which science is able to give of the relation between the two unconformable processes which Professor Huxley has distinguished as *neurosis* and *psychosis*. After testing several suppositions, associated with eminent names, we have been driven to the conclusion that it is absolutely impossible to combine movements and thoughts, as we conceive them, into one self-consistent scheme. We can treat our external perceptions as movements of a material world outside us, and then we have a perfectly homogeneous and inter-connected assemblage of facts; and we can treat our conscious states as such, but we cannot mix up conscious states along with movements of the supposed external world. The two are wholly incommensurable, and every endeavour to blend them lands in hopeless confusion. Thus, whenever we deal, as physical science deals, with facts of the material world, we find no trace of, no room for, any facts of consciousness; and this being so, we have seen that the only legitimate course for science to take is to ignore altogether facts which give no physical evidence of their existence. The students of science have not been backward to adopt this course in regard to Divine Intelligence. Discovering no traces of the Creator's

interference among the facts with which they deal, they properly decline to recognise His purposive interpositions or presence there. But they refuse to deal in the same logical manner with the precisely parallel case of human intelligence. No physical traces of that are discoverable, in hand, or eye, or brain. All bodily changes take place, so far as is known, exactly as they would without a directing mind; nevertheless, mind is still affirmed to exist in some mysterious physical combination with the bodies of men and animals; and the nature of the union is deemed a legitimate subject for scientific discussion, though not a vestige of scientific evidence can be shown that one member of the pair is present. Scientific men urge impossible theories to account for mind in human bodies, as their opponents have to account for Divine Intelligence in nature.

And now, let us ask how our conclusion that Materialism leaves no room for, and is therefore bound to ignore, all facts of mind, bears upon the endeavour pursued in these pages—the endeavour to find whether the conclusions respecting phenomena at which physical science arrives can possibly be really true, and hold good of things actually outside us; or whether, on the contrary, Realism, when followed out to its logical consequences, confutes its claim to represent things as they are, and demonstrates that its assertions can be valid only within the limits of phenomena, or respecting things as they seem.

The issue to which our late enquiry has led us yields emphatic testimony on this question. For if it be true that the only legitimate attitude of physical science towards facts of mind is to ignore them altogether, and proclaim that, as far as it is concerned, animals and

men are mere automata, wholly subject to physical causation, and therefore exhibiting no effects or indications of consciousness, this exclusion of mind from the human world is surely a *reductio ad absurdum* of the claim of Materialism to represent things as they are. It is, of course, a conclusion too outrageous to be entertained as really true; and, therefore, if it be, as here maintained, the logical issue of Materialism, it is a proof of its inadequacy to represent the facts which confront us. It may seem an objection that no school of materialists has taught that this is the logical issue of their position. But the fact that it is a practical disproof of the reality of the materialistic hypothesis is reason enough for its non-recognition. We have seen how exceedingly near to our conclusion some of the most eminent leaders of scientific thought have come; that they adopt it in regard to Divine Intelligence; and that in regard to that of men, they come so near to it that a single, and as it seems a logically inevitable, step would land them in it. They admit that men's minds have no power over events, which not only amounts to a denial of volition, but renders all indications of consciousness impossible, since it implies that our bodies would act precisely as they do in the absence of minds. And yet, in this acknowledged destitution of evidence, men and animals are still called *conscious* automata, and by those who justly boast that they are bound to follow whithersoever scientific evidence leads, and disclaim any modification of strictly scientific conclusions by considerations extraneous to science. But it is such considerations alone which can lead them to predicate consciousness of beings wholly governed by physical causation, which would cease to be such if feeling could give a single indication of its presence—that is,

could *produce any effect*. A protest must be raised against this inconsistency of blending consciousness with human automata, because, for reasons which physical science cannot weigh, we are constrained to believe that other conscious beings are around us. Physical evidence alone ought to govern our conclusions respecting physical facts, and it teaches us that material bodies, *as we conceive them*, have no minds. And then, our positive and irresistible assurance that other intelligences are at hand, is so much evidence that the materialistic scheme, which holds perfectly good of things that *seem*, is incompetent to represent things that *are*.

If, then, the preceding argument holds good, it shuts us up to the following alternatives :—We may regard the material world as real, but if we do, we must deny the existence of all but Creative Intelligence, for the science which interprets the material world explains all its facts by physical causation, and leaves no room for mind. If the material world is as it *seems*, it contains no minds ; and if we believe that it *is*, we are bound to exclude minds from the physical universe. Or we may say, I have a mind, and other conscious beings surround me ; and since the materialistic hypothesis disallows their and my conscious existence, it cannot truly represent things that *are*, however legitimate and indispensable an assumption in dealing with things that *seem*. Its phenomena are demonstrably illusive, if treated as realities ; they must, therefore, be regarded as appearances only, and the laws they observe must be deemed laws of appearances and not laws of things. Within the limits of the appearances of external nature, natural laws, therefore, are perfectly valid, but we err when we suppose that they govern realities.

CHAPTER II.

REALISM: ITS EXPLANATIONS OF THE FACTS OF CONSCIOUSNESS INADEQUATE.

§ 1. NO DIRECT COGNIZANCE OF EXTERNAL OBJECTS.

THE conclusion at which we arrived in the preceding chapter bears important inferences, and for that reason demands to be firmly established by help of all the evidence which may be urged in its support. Such evidence is forthcoming from different quarters, and we will consider it before discussing inferences further.

That it is not possible for us to perceive external things as we suppose them to be, is evident from the account which science gives us of what takes place in perception. The mechanism and mode of action of the nervous system have already been sufficiently described to render intelligible what happens in vision, for example, when we suppose we see a distant object. The object emits or reflects rays of light, which consist of waves of aether. Some of these enter the eye, and strike the sensitive expanse of nerve at the back of it, which is called the retina. The waves of aether, striking on that peculiarly sensitive surface, shake waves along the delicate nerve-fibres which terminate there, and these waves pass along the optic nerve to the optic

ganglion in the brain, which forms part of the sensorium. And, as before explained, it has been ascertained by experiments that it is only when the nerve-waves arrive there in the brain that those feelings of light are experienced which constitute the perception of a distant object. It is the same with the other senses. Their special organs are situated at the surface of the body, but the sensations characteristic of them do not arise there. The external impressions made on those organs produce no effect in consciousness till the nerve-waves originating at the extremity have been transmitted to the sensory ganglion concerned, in the brain. Only then, and only there, is the sensation felt. Nevertheless, we always refer our sensations to the outer extremities of the incarrying nerves, instead of to these inner extremities in the brain, where alone, it appears, they really arise. Professor Huxley's statement of this fact has already been quoted, that there is 'an *extradition* of that consciousness which has its seat in the 'brain to a definite point of the body ; which takes place 'without our volition, and may give rise to ideas which 'are contrary to fact.' It follows, that the sensations and perceptions of which we are conscious are not, and cannot be, produced directly by external objects, but only by the nerve-waves which reach the brain. Even if it were otherwise, and our feelings of light, for example, arose, as used to be supposed, in the retina, where the nervous organism comes into actual contact with the external world, we could be directly conscious only of the waves of aether which smote the retina, and not of the object which emitted them. This is admitted by Sir W. Hamilton, the great modern advocate of our direct cognizance of the external world. The assertion, 'I perceive the walls of the room,' is incorrect, he says.

‘What we loosely call the walls of the room is only the light reflected from their surface in its relation to the organ of sight.’¹ Again:—‘The sun can be no immediate object of consciousness in perception, but only certain rays in connection with the eye.’² Our inability to apprehend external objects themselves is still more obvious, now that consciousness cannot be ascribed to any part of the surface of the body, but is found to have its seat in the brain alone. All our feelings, we now learn, even our visual perceptions of near and distant objects, are located inside the dark closet of the skull, whose sole means of communication with the outer world consists of the molecular nerve-waves, which traverse the fibres connecting the brain with the periphery. And the fibres are all similar in composition, and the movements which traverse them are all waves, so that there is nothing in them capable of conveying to the brain such remarkable peculiarities as distinguish our different sensations; in other words, the physical impressions which, when they reach the brain, give rise to sights, sounds, tastes, and pains, are, while on their way there, essentially alike, and all composed of waves. The differences do not exhibit themselves till afterwards, and are all engendered in the brain. In this respect, the nervous organism presents the closest parallel to an electric telegraph system, as Professor Helmholtz shows in the following passage:—

‘In telegraphs, we find everywhere the same copper or iron wires carry the same kind of movement, a stream of electricity, but produce the most different results in the various stations, according to the auxiliary apparatus with which they are connected. At

¹ Note on Reid's Works, p. 301.

² *Ibid.*, p. 303.

‘one station the effect is the ringing of a bell, at another a signal is moved, and at a third a recording instrument is set to work. . . . When the Atlantic cable was being laid, Sir W. Thomson found that the slightest signals could be recognized by the sense of taste, if a wire was laid upon the tongue. Or again, a strong electric current may be transmitted by telegraphic wires, in order to ignite gunpowder for blasting rocks. In short, every one of the hundred different actions which electricity is capable of producing, may be called forth by a telegraphic wire laid to whatever spot we please, and it is always the same process in the wire itself which leads to these diverse consequences. . . . Therefore, as motor nerves, when irritated, produce movement, because they are connected with muscles, and glandular nerves secretion, because they lead to glands, so do sensitive nerves, when they are irritated, produce sensation, because they are connected with sensitive organs.’¹

It must be remembered, however, that there is a profound difference between the last mentioned of these results and the rest, or any others which might be named. For muscular contractions and glandular secretions consist, the one of the movements of material particles, the other of their re-arranged condition after movement, whereas sensation is something wholly *sui generis*, and not pertaining to the physical organism, all whose movements take place as if it were not there. Speaking strictly, therefore, physiology can apprehend only the movements in the sensory ganglia, induced by the waves arriving there. Still, somehow or other, a movement set up in a sensory ganglion occasions in us a special sensation; we see sights when waves invade

¹ Helmholtz' *Popular Lectures on Scientific Subjects*, pp. 232-3.

the optic ganglion, and when the auditory ganglion is agitated, we hear sounds, and so with the rest ; and the point is that each of these sensations, distinct from the rest, and still more profoundly different from the movements of the telegraphic system of nerves spread over the body, arises only in the particular ganglion of the brain associated with each.

Another fact in exact conformity with this arrangement, is that a sensation is excited by any irritant which sends waves to the ganglion in which it arises. For example, whatever irritates the optic nerve, whether luminiferous waves or anything else, gives us the sensation of light. Prof. Helmholtz illustrates this point in these words :—

‘The character of a sensuous perception depends not so much on the properties of the object perceived, as on those of the organ by which we receive the information. All that the optic nerve conveys to us, it conveys under the form of a sensation of light, whether it be the rays of the sun, or a blow in the eye, or an electric current passing through it. Again, the auditory nerve translates everything into phenomena of sound, the nerves of the skin into sensations of temperature or touch. The same electric current whose existence is indicated by the optic nerve as a flash of light, or by the organ of taste as an acid flavour, excites in the nerves of the skin the sensation of burning. The same ray of sunshine which is called light when it falls on the eye, we call heat when it falls on the skin.’¹

Since perception and sensation take place in this way, it is indisputable that we cannot, as we suppose, directly apprehend objects outside us. Our feelings, it

¹ *Popular Lectures on Scientific Subjects*, p. 53.

is obvious, are separated both in space and in time from the objects they seem to reveal. In *space*, for feelings are all situated in the enclosed chamber of the skull, and communicate, even with the surface of the body, only by wave-conducting nerve filaments, to say nothing of the further spaces which intervene in the case of distant objects. In *time*, for as explained before (page 63), the rays which emanate from a distant object must cease to exist as light-waves, and assume the form of nerve-waves, before we can be conscious of them, and even the impressions which a hard body makes when pressed on our nerves themselves take an appreciable time to travel to the brain, so that all we can know even of a body with which our own is in actual contact is that it *did* exist, and never that it *does*. This is acknowledged in the case of a distant star from which the waves of light take years to travel to us. We are told that we can be sure only that the star existed when the light we receive left it. But obviously the same is true of every nearer object. Though when we press the table, only the fraction of a second elapse between the origination of the nerve-waves it excites and their arrival in the brain, that recent Past is as completely gone as distant ages are, and the sensation of hardness we experience testifies therefore, not to the present, but only to the past existence of the table which we press.

§ 2. DO SENSATIONS RESEMBLE EXTERNAL OBJECTS ?

Not only is our consciousness thus cut off from the world outside, by intervals of space and of time, but we have evidence in the facts mentioned above that the occurrence of a particular sensation is no guarantee

that the object which corresponds to it in our minds exists outside and produced it, for we have seen that anything which irritates the nerves concerned is competent to excite the same sensation. As Professor Helmholtz teaches,—

‘The peculiarity in kind which distinguishes the sensation of light from all others does not depend upon any peculiar quality of light itself. Every action which is capable of exciting the optic nerve is capable of producing the impression of light; and the purely subjective sensation thus produced is so precisely similar to that caused by external light, that persons unacquainted with these phenomena readily suppose that the rays they see are real objective beams.’¹

Elsewhere he writes,—

‘The simple rule for all illusions of sight is this: *We always believe that we see such objects as would, under conditions of normal vision, produce the retinal image of which we are actually conscious.*’²

But inasmuch as the retinal image may be produced by other means as well as by the objects supposed, not only is our belief that we see *them* untrue in any case, but our inference that they produced what we do see is at best uncertain and unwarranted. It follows, that the reason why we believe that an external object exists before us is not because we actually perceive it there, but only because our optic ganglion is receiving from the optic nerve waves of a certain kind. Only let those nerve-waves reach the ganglion, however produced, and, in the absence of counteracting impressions, we shall have the belief, quite irrespective of the presence of the external object which corresponds to it. For the

¹ *Popular Lectures on Scientific Subjects*, p. 235.

² *Ibid.*, p. 307.

nerve-waves, though wholly unlike the object, and wholly unlike the belief, are our sole warrant for the belief. An external object *exists for us* whensoever and by whatsoever the nerve-waves we associate with it are generated. It cannot be to us anything else than those waves. This is the explanation of various optical illusions, and of many a ghostly vision. The persons to whom ghosts appear do actually see them as truly as they see anything; that is to say, their brains receive, by some means or other, the nerve waves which ghostly forms would excite if they were present. Stronger evidence of a ghost's presence it would not be possible for anybody to have.

These considerations obviously cannot be confined to ghosts. They hold good of the material world at large. Our warrant for the world's existence is that we keep receiving the nerve-waves which its ten thousand objects would excite if present. But let them all be absent, and we should not know it so long as the nerve-waves continued to arrive. They, though quite unlike the world, whose messages they are supposed to bring, and most of all unlike our mental picture of it, do for us *constitute* the world.

These results, it will be observed, are reached by simply following the materialistic hypothesis to the inevitable issues to which, in interpreting it, physical science conducts us. Grant that the material world is as it seems, and the mechanism ascribed to it is such that we cannot possibly have any direct perception of what is outside our own brains. In other words, it is one of our strongest convictions that we can immediately perceive an external world, but it is a necessary inference from treating it as it appears, that if it exists we cannot perceive it! By thus furnishing evidence

that Materialism, if carried out to its consequences, contradicts itself, physical science testifies to the illusiveness of Materialism and confutes its claim to represent things as they are. But physical science properly refrains from drawing these inferences, which it leaves to philosophy, and still proceeds on the assumption the fallacy of which it has exposed. For physical science treats not of realities, but of external phenomena, and to them Materialism conforms.

The position which science takes at present in regard to this matter may be seen in the following statements of the eminent physicist Helmholtz, from whose writings we have quoted already :—

‘Perhaps the relation between our senses and the external world may be best enunciated as follows : our sensations are for us only *symbols* of the objects of the external world, and correspond to them only in some such way as written characters or articulate words to the things they denote. They give us, it is true, information respecting the properties of things without us, but no better information than we give a blind man about colour by verbal descriptions.’¹

Again—

‘Our sensations are, as regards their quality, only *signs* of external objects, and in no sense *images* of any degree of resemblance. An *image* must, in certain respects, be analogous to the original object—*e.g.*, a statue or a picture. . . . For a *sign* it is sufficient that it become apparent as often as the occurrence to be depicted makes its appearance, the conformity between them being restricted to their presenting themselves simultaneously; and the correspondence existing between our sensations and the

¹ Lecture On Goethe's Scientific Researches, p. 54.

‘objects producing them is precisely of this kind.
 ‘They are signs which we have *learned to decipher*,
 ‘and a language given us with our organization by
 ‘which external objects discourse to us. . . . What
 ‘has been said holds good not only for the qualitative
 ‘differences of sensations, but also in any case for the
 ‘greatest and most important part, if not the whole, of
 ‘our various perceptions of extension in space. . . .
 ‘We found how all laws can be reduced to laws of
 ‘motion. We now find that our sensations are merely
 ‘signs of changes taking place in the external world,
 ‘and can only be regarded as pictures in that they
 ‘represent succession in time. For this very reason
 ‘they are in a position to show directly the conformity
 ‘to law, in regard to succession in time, of natural
 ‘phenomena.’¹

The last paragraph declares that our sensations are more truthful representations of external things in some respects than in others—a statement which receives further elucidation in the following passages:—

‘Functional cerebral activity, and the mental con-
 ‘ceptions which go along with it, may be images of
 ‘actual occurrences in the outer world, so far as the
 ‘former represent the sequence in time of the latter; so
 ‘far they represent likeness of objects by likeness of
 ‘signs—that is, a regular arrangement by a regular
 ‘arrangement. . . . This is obviously sufficient to
 ‘enable the understanding to deduce what is constant
 ‘from the varied changes of the external world, and to
 ‘formulate it as a notion or a law.’²

Again—

‘In the region of qualities, we are in some instances

¹ *Lecture On the Aim and Progress of Physical Science*, pp. 391-2-3.

² *Lecture On Recent Progress of the Theory of Vision*, p. 259.

‘able to prove conclusively that there is no correspondence at all between sensations and their objects. Only the relations of time, of space, and of equality, and those which are derived from them, of number, size, regularity of co-existence and of sequence—mathematical relations, in short—are common to the outer and the inner world; and here we may indeed look for a complete correspondence between our conceptions and the objects which excite them.’¹

In considering the view presented in these passages, of the relation of our sensations to the external world, let us, in the first place, enquire how far it is true that while, in regard to qualities, or certain qualities, there is no correspondence, in mathematical relations there is complete correspondence, between our conceptions and the objects which excite them. It is obvious enough that sensations situated in the dark closet of the skull cannot possibly be true copies of many qualities of many objects. The scent of a rose, for example, as a feeling in the brain, can have nothing at all resembling it in the actual flower. So too its colour, as a sensation of red, is wholly diverse from the light waves which the flower reflects. These and other such sensations are mental facts which, because mental, cannot belong to purely material objects. They exist only in the minds which perceive those objects. The material universe, apart from the minds which perceive it, is, therefore, but a congeries of moving masses and vibrating molecules, without light, or heat, or sound, as we experience them; and it is only in the scattered islets of consciousness conceived to lie in the brains of men and animals, that the dark, cold, silent atom-streams of matter are transfigured into the radiant, coloured, ardent, and

¹ *Lecture On Recent Progress of the Theory of Vision*, p. 316.

vocal world presented to our thought as an organic whole. But is it otherwise with relations of space? Do our mental conceptions of distances correspond completely to actual distances, or *resemble* them in any respect? Our thought of a hundred miles is certainly not a hundred miles long; the thought of an inch does not take up an inch of the brain; nor is the thought of a triangle the shape of a triangle. It is true, indeed, that if attention were fixed on two points outside, near enough together for the eye to see them both without moving, they would affect two points of the retina of an observer separated by a space bearing a certain proportion to that between the points selected. Probably it is true also that, as each nerve-filament proceeds separately to the brain, a corresponding space would divide the points affected in the optic ganglion. But it does not follow that we should be conscious of *those points*, far less of those points *as separated by that space*. To take the last first, a consciousness of the distance intervening between two points of feeling, would be a feeling of an interval which, on the supposition, was unfelt. And our mental apprehension of any point in space cannot surely be an apprehension of the very point in the brain where the feeling is experienced; nor our feeling of extension an apprehension of the very space occupied by the feeling. For we are not conscious of points or distances inside the brain, but we suppose we are conscious of them outside it. And this is not, surely, because we falsely imagine points to be outside which are really within the brain, but because what we are actually conscious of is not the point or space where consciousness arises, but *a mental picture*, which has no more relation to the locality in which it is situated than the scenery of a landscape-painting has any rela-

tion to the room in which it is exhibited. Again, if our mental apprehension of a point in space is not a consciousness of the particular point where the feeling arises, still less can it be a consciousness of any other point, for, as Hamilton teaches, 'Consciousness is a knowledge solely of what is now and here present to the mind.'¹ We cannot, therefore, be directly conscious of any point of space. Nor is it possible, if our thoughts and feelings themselves have no extension, that they should *resemble* space or anything which has extension. It is noticeable that it is only in the passage last quoted that Professor Helmholtz declares that in regard to space, our conceptions are true representations of objects; in the earlier quoted passages he affirms that this correspondence holds good only in regard to time.

No doubt the case is different in regard to time. 'Time,' says Kant, 'is the formal condition *à priori* of all phenomena whatsoever. Space . . . is limited as a condition *à priori* to external phenomena alone.'²

For suppose a falling stone which reaches the ground a second or two later than when it began to descend. Those points of time, the one later than the other, are imaged with strict accuracy in the earlier and later times at which an observer perceives the stone in those two positions. Or suppose a series of pictures, representing the successive incidents of a journey, exhibited to us in the order of their occurrence. It is plain that the pictures would *repeat over again* the succession of the incidents, and the order of their occurrence, while their pictorial contents would be but symbolic of the actual incidents, though they might reproduce the

¹ Notes on Reid, p. 810.

² *Critique of Pure Reason*, Meiklejohn's Translation, p. 30.

visual perceptions of the journey. That is to say, a succession of thoughts, and even a single thought, does occupy time *in the same sense in which anything occupies it*. Our mental conceptions repeat over again in their sequence the succession in time which external occurrences observe.

Even in regard to time, however, it must be said that it is only when we assume the truth of the materialistic hypothesis that we can affirm the succession of events to be truly imaged in our conceptions. We have seen, indeed, that the materialistic hypothesis cannot itself take cognizance of facts of mind, but still it rests on the assumption that we have *presentative* knowledge of the external world; *that is*, our evidence for believing that things are as they seem. Professor Helmholtz, however, following the hypothesis to its issues by the aid of his physical science, reaches the conclusion that our feelings are all located in the skull, from which it follows that our knowledge of the world outside cannot be *presentative*, or a consciousness of what is *here* and *now*, but only *representative*, and that not by resembling images, but by non-resembling signs, except in regard to time. It is obvious that this conclusion undermines the foundation of the materialistic hypothesis. But when we deal with material phenomena, we must proceed on the assumption of its truth, and then it is correct, within the limits of that assumption, to say that our mental conceptions reproduce the time-relations of external events, but do not otherwise resemble them. Professor Helmholtz expresses this conclusion in these terms :—

‘ For a *sign* it is sufficient that it become apparent as
 ‘ often as the occurrence to be depicted makes its
 ‘ appearance, the conformity between them being re-

'stricted to their presenting themselves simultaneously;
'and the correspondence existing between our sensa-
'tions and the objects producing them is precisely of
'this kind.'¹

But if the materialistic hypothesis leads to this conclusion when strictly carried out, manifestly it confutes itself. For that hypothesis assumes the external world to be as it seems, while this conclusion drawn from it declares that the conformity between the external world as it seems, and as it is, is restricted to certain correspondences in time. By following out the supposition that the material world is what it seems, scientific men are brought to the discovery that it cannot be as it seems. In other words, if it exists as we perceive it, it follows that we cannot perceive it.

§ 3. SENSATIONS THE ONLY OBJECTS KNOWN TO SCIENCE.

It appears, then, that a study of the mechanism of external perception, as interpreted by the highest authorities in physical science, brings us to the same conclusion to which our examination of the relation between brain changes and consciousness led—the conclusion that the external world at least cannot be what it seems to us; in other words, that the materialistic hypothesis, though a legitimate and indispensable assumption in dealing with *appearances*, does not hold good of things that *are*. It is not, however, the province of physical science to act upon this distinction. It treats of phenomena, and not of what lies behind them, if anything does. And it treats them as being what they seem. So, of course, Professor Helmholtz does, in his physical enquiries. He does not keep reminding us that our perceptions of

¹ *Popular Lectures on Scientific Subjects*, p. 391.

external objects are mere signs, quite unlike the objects which excite them. *The signs are the objects for him.* It is true, indeed, that sensations such as smells, tastes, sounds, and colours, are by the scientific enquirer interpreted into chemical changes, or other movements of matter. These sensations are thus reduced to their *still mental* equivalents in the common measure of matter and motion. Still mental, for we have been taught by Professor Helmholtz and others that these so-called perceptions of matter and motion are all feelings situated in the brain, and cannot, therefore, resemble the external objects they are supposed to indicate. Yet these perceptions, called mere symbols, are themselves *the phenomena* with which physical science deals. It cannot, its boast is that it does not attempt to, get at the realities behind phenomena. It adheres to the materialistic hypothesis, which treats *the phenomena of perception as being what they seem.*

If so, Professor Helmholtz is in error surely, when he says that our sensations are 'signs which we have *learned to decipher*, and a language given us with our 'organization by which external objects discourse to 'us.'¹

For our sensations, or at least our perceptions, are the only objects which discourse to us; the external objects, if such there be, which excite them, are not among *phenomena*, and it is only with phenomena that physical science deals. The above expression supposes that we are accustomed to pass beyond our perceptions, and cognize the non-resembling material objects which they indicate. But we cannot pass, in this case, from the signs to the things signified, because the things signified are for ever beyond us.

¹ *Popular Lectures on Scientific Subjects*, p. 391.

The following illustration, also quoted before, is open to similar criticism,—‘our sensations are for us only ‘*symbols*’ of the objects of the external world, and correspond to them only in some such way as written ‘characters or articulate words to the things they ‘denote.’¹

But this parallel seems to fail in an essential particular. We employ written and spoken words as short convenient signs for representing objects which make impressions on us in other ways. The word ‘pebble,’ for example, is a short name for a certain aggregate of impressions of form, colour, weight, and resistance, which we are accustomed to receive, and by the repeated association of that name with those impressions, the one immediately suggests the other. But if those impressions had never presented, and could never present, themselves to us—if the word ‘pebble’ was all we could ever know of them—that word could not possibly suggest the impressions, and could not be a sign of the object it now represents. It is exactly thus with our perceptions as ‘symbols of the objects of the external world.’ Those objects, on the supposition, never impress us themselves; we know their symbols only, which cannot, therefore, call up objects which have never been presented. The symbols, our own conscious states, consequently, are not properly symbols at all, they stand for nothing behind themselves. Our *sensations* are indeed non-resembling symbols of certain of our *perceptions*. So altered, the expression holds good. For smells, tastes, sounds, colours, &c., are signs of other different impressions we receive, and call chemical changes, or vibrations,—all being various modes of motion. The smell of a rose, for example, is

¹ *Popular Lectures on Scientific Subjects*, p. 54.

the sign of a chemical change in the olfactory nerve, and the sound of a ringing tumbler is the sign of vibrations in the glass. But in such cases it is only that our sensations *are expressed in terms of certain perceptions which correspond to them*, while, in the last analysis, our perceptions are conscious states as much as our sensations, which Professor Helmholtz admits when he teaches that only time-relations are truly reproduced in consciousness. Hence our conscious states cannot be even symbols of '*objects of the external world.*' To take another example: it is implied in the comparison just quoted from Professor Helmholtz, that as the two words 'Mont Blanc' suggest to our minds a certain snow-capped mountain, although the words are wholly unlike the mountain, so the mental elements of a perception may represent in symbol the altogether diverse facts of the material world. But what really happens in the case supposed? The *appearance*, or *sound* of the words 'Mont Blanc' has, by frequent association with the *conception* of the mountain, come to call the conception into consciousness. That conception is, no doubt, quite unlike the appearance or sound of the words, but these diverse mental facts have become glued together, as any diverse mental facts may, by repeated connections in thought. Strictly speaking, one should say that the brain-changes which correspond to the words Mont Blanc, and those others which correspond to the idea of the mountain, have established mutual relations in the nervous organism, which make the one set of waves generate the other set. But can our sensations, or even our perceptions, be in this way signs of the objects of the external world? We have seen that our sensations and perceptions can be linked together by mental association; but how can either call

up objects of the external world, which, on the supposition, never enter consciousness, being known there only by their symbols? How can the symbols become associated with their objects in our minds, since the objects are never present to our minds?

Viewed in another light, the doctrine of Professor Helmholtz, that our sensations, &c., are non-resembling symbols of external objects, appears also wholly unsatisfactory. We may study the physical constitution of eye and nerve, and we may study the sensations of sight, but these two points of view are not only distinct, but incompatible. In the first case, we proceed on the materialistic hypothesis, and examine the mechanism by which light-waves and nerve-waves are transmitted to the brain. And in confining ourselves to the materialistic hypothesis, we shall not, it has been explained, come upon feelings at all, but deal simply with the movements of a physical structure; so that the particular problem of *perception* will not arise. But if we study the facts of perception as psychologists, we start with our feelings, and proceed to enquire what knowledge of the external world they can afford us. The answer is, that we cannot know the supposed external causes of our feelings, which we conceive to be wholly unlike our feelings. We are constrained to believe in these *things-in-themselves*, but they cannot be more to us than the unknown causes of our feelings. They are not *phenomena*, but the realities supposed to underlie phenomena. Our feelings can at most be symbols indicative of those inaccessible realities.

Now it is mainly as a physical enquirer that Professor Helmholtz has investigated with so much ability the facts concerned in perception; and if he adhered to

the rules of scientific procedure, and confined himself to the facts which gave physical evidence of their presence, he would not, as we have seen, come upon any feelings at all, and the difficulty of supposing feelings to be percipient of distant objects would not arise. But instead of limiting himself to physical facts, he *superadds to them, and in the absence of physical evidence*, feelings conceived to exist in the brain. Thereupon an entirely new problem arises, the great problem of Psychology. What knowledge of the external world can feelings afford? The answer of Psychology, we have seen, is indubitable, that feelings cannot be more than symbols indicative of objects outside which are forever inaccessible, and to which the symbols can bear no resemblance except that both occupy time. Professor Helmholtz accepts this conclusion, and states it with all explicitness; but he treats it as the proper answer to his composite problem, in which the material world being assumed to exist as it appears, feelings are supposed to exist in combination with it, at particular points in the brain. The above conclusion does indeed furnish an answer to this problem, but in the shape of a *reductio ad absurdum*. For the hypothetical external causes of our feelings can never be perceived or known, and are the *things-in-themselves* of Ontology. And yet, according to Professor Helmholtz, the objects of the external world stand exactly in that relation to the feelings in the brain which are their symbols. It follows that we can know no more of the external world than we do of *things-in-themselves*, of which confessedly we know nothing. In a word, on the theory of Professor Helmholtz, the material universe is identified with the unknowable existences of Ontology. And this although all his scientific reasonings, and among them his con-

clusions respecting perception, and his localization of feelings in the brain, are based on the supposition that the material universe is knowable, its objects constituted as physical science describes them to be, and its animal organisms arranged to telegraph to one another by the elaborate mechanism of external perception. If Professor Helmholtz were to protest that, like all physical enquirers, he deals in his scientific investigations with material *phenomena* only, making no inquisition into their essential nature, but concerned exclusively with the *appearances* they present, that would be the same as saying that his physical investigations relate exclusively to the *symbols* which alone are present to consciousness; and if so, by what right does he place these symbols at points in a material universe outside them, with which on the supposition, he has nothing to do? While, if he supposes that his material phenomena consist of the external objects which the symbols indicate, those objects, on his own showing, are just as inaccessible as the *things-in-themselves* of the ontologist; and it is an entire misnomer to call them *phenomena*, for they never *appear*. All depends, therefore on what Professor Helmholtz would explain material *phenomena* to be, whether symbols in consciousness, or the external objects symbolized there. Neither alternative is tolerable. If material phenomena are but mental symbols, he has nothing to do, as a physical investigator, with external objects outside them. While if material phenomena are the external objects indicated by the symbols, those objects can no more be perceived by us than things-in-themselves. The truth is, that these difficulties are born of the combination of incompatible suppositions on which Professor Helmholtz proceeds. It is not possible to study the physical and psychical facts of perception as

parts of a common scheme. This conclusion, which we have reached again and again, once more confronts us here. The impossibility manifests itself afresh in the contradictory results to which the two views conduct Professor Helmholtz, when, in his account of perception, he superadds to the physical situation, feelings which leave no physical trace. When he introduces feelings, external objects become as inaccessible as things-in-themselves. Whereas his physical enquiries proceed on the assumption that the wide-spreading material universe which we perceive exists around us. But that universe could not be disclosed to us, as it is disclosed to us, by feelings situated in the brain. In other words, the materialistic hypothesis is incompatible with the recognition of feelings. Postulate them, and external objects can be nothing more to us than things-in-themselves. If, then, we have any further knowledge of external objects than we have of things-in-themselves, the doctrine that we perceive them by means of feelings in the brain cannot be true.

§ 4. THEORIES OF REPRESENTATIVE PERCEPTION UNTENABLE.

In addition to these special criticisms, Professor Helmholtz' account of our knowledge of the external world, the strict scientific result of his physical investigations of perception, being essentially the Representation theory which, under different forms, many psychologists have held, lies open to those fundamental objections so powerfully urged against Brown by Sir W. Hamilton. It is not quite clear, indeed, which form of the Representation theory our author holds, since, as we have seen, in one passage he speaks of mathematical

relations in general as common to the outer and inner worlds, which looks as if he conceived consciousness to apprehend directly material shapes and sizes in the brain, while in other passages he restricts the conformity in question to relations of time, which would imply that the immediate objects of perception are mental. But in either case, his allocation of consciousness to the brain alone, coupled with his teaching that its states are symbols of external objects, constitutes the view to which modern science is pledged, essentially one of representative perception; in other words, it is now proved that external objects are known to us, 'only through vicarious phenomena, numerically different from the objects themselves.' A few sentences from the vigorous critique of Sir W. Hamilton will show the philosophical absurdity of such schemes of representative perception, or Hypothetical Realism, and bring the modern conclusion of Professor Helmholtz into relation with some of the older psychological theories.

'The facts about which this hypothesis is conversant, are two:—the fact of the *mental modification*, and the fact of the *material reality*. The problem to be solved is their connection; and the hypothesis of *representation* is advanced, as the ratio of their correlation, in supposing that the former *as known* is vicarious of the latter *as existing*. There is, however, here a see-saw between the hypothesis and the fact: the fact is assumed as an hypothesis; and the hypothesis explained as a fact; each is established, each is expounded, by the other. To account for the possibility of an unknown external world, the hypothesis of *representation* is devised; and to account for the possibility of representation, we imagine the hypothesis of an

'*external world*, on this supposition, the fact of the external reality is not only petitory but improbable.'

'The existence of external things, which is given only *through* their intuition, it [the representative theory] admits; the intuition itself, though the *ratio cognoscendi*, and to us therefore the *ratio essendi* of their reality, it rejects. But to annihilate what is prior and constitutive in the phenomenon, is, in truth, to annihilate the phenomenon altogether. The existence of an external world, which the hypothesis proposes to explain, is no longer even a truncated fact of consciousness; for *the existence given in consciousness*, necessarily fell with the intuition on which it reposed. A representative perception is, therefore, an hypothetical explanation of a *supposititious* fact: it creates the nature it interprets.'

'The doctrine in question attempts to explain the *knowledge of an unknown world*, by the ratio of a representative perception: but it is impossible, by any conceivable relation, to apply the ratio to the facts. The mental modification, of which, on the doctrine of representation, we are exclusively conscious in perception, either *represents* (*i.e.* affords a mediate knowledge of) a real external world, or it does not. (We say only *a real*; to include all systems from Kant's, who does not predicate even an existence in *space* and *time* of things in themselves, to Locke's, who supposes the transcendent reality to *resemble* its idea, at least in the *primary qualities*.) Now the latter alternative is an affirmation of absolute Idealism; we have, therefore, at present only to consider the former. And here, the mind either *knows* the reality of what it represents,

¹ *Discussions in Philosophy*, pp. 64, 65. ² *Ibid.*, pp. 65, 66.

‘or it does not. On the *prior* alternative, the hypothesis under discussion would annihilate itself, in annihilating the ground of its utility. For as the *end* of representation is knowledge; and as the hypothesis of a representative perception is only required on the supposed impossibility of that presentative knowledge of external things, which consciousness affirms:—if the mind is admitted to be cognisant of the outer reality in itself, previous to representation, the *end* towards which the hypothesis was devised as a *mean*, has been already accomplished; and the possibility of an intuitive perception, as given in consciousness, is allowed. Nor is the hypothesis only absurd, as superfluous. It is worse. For the mind would in this case be supposed to *know before it knew*; or like the crazy Pentheus, to *see its objects double*,—

“ Et solem geminum et duplices se ostendere Thebas:”

‘and if these absurdities be eschewed, then is the *identity of mind and self*,—of *consciousness and knowledge*, abolished; and *my intellect* knows, what *I* am not conscious of its knowing! The *other* alternative remains:—that the mind is *blindly* determined to *represent*, and *truly* to represent, the reality which it does not know. And here the mind either *blindly determines itself*, or is *blindly determined by an extrinsic and intelligent cause*. The former lemma is the more philosophical, in so far as it assumes nothing hyper-physical; but it is otherwise utterly irrational, inasmuch as it would explain an effect by a cause wholly inadequate to its production. On this alternative, knowledge is supposed to be the effect of ignorance,—intelligence of stupidity,—life of death. . . . The absurdity of this supposition has accordingly

‘constrained the profoundest cosmothetic idealists, notwithstanding their rational abhorrence of a supernatural assumption, to embrace the second alternative. To say nothing of less illustrious schemes, the systems of Divine assistance, of a Pre-established Harmony, and of the vision of all things in the Deity, are only so many subsidiary hypotheses,—so many attempts to bridge, by supernatural machinery, the chasm between the *representation* and the *reality*, which all human ingenuity had found, by natural means, to be insuperable. The hypothesis of a representative perception thus presupposes a *miracle* to let it work.’¹

Formerly, schemes of representative perception were only theories more or less probable, which might be accepted or rejected at pleasure; but modern science, by showing that consciousness resides only in the brain, makes it certain that our knowledge of the external world can be but mediate and representative. The discovery that the brain is the sole seat of consciousness commits modern science, therefore, to a scheme of representative perception, with all its attendant absurdities. They are among the necessary and inevitable issues of the materialistic hypothesis when applied to facts of mind, and prove, like other considerations urged before, that that hypothesis is untenable outside the region of material phenomena.

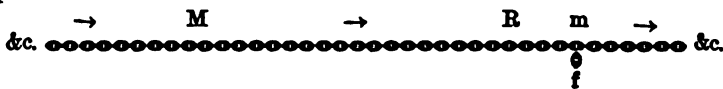
§ 5. NO EXPLANATION OF CONNECTION BETWEEN A PERCEPTION AND ITS OBJECT.

That the materialistic hypothesis, as modern science interprets it, is inadequate to account for the perception of external objects by feelings situated inside the skull,

¹ *Discussions in Philosophy*, pp. 66-68.



is evident also when we try, on the theory, to explain the connection between any perception and the external fact which it is supposed to reveal. Suppose, for example, some one sees a stone fall. Here are two sets of facts, the fall of the stone, which is a series of external molar movements, and the perception of the fall, which on its physical side, is a series of molecular movements in the brain. These two sets of facts, though themselves dissimilar, and though separated from each other both in space and in time, yet stand in this peculiar relation to each other, that the set of molecular movements have psychical accompaniments which form a mental picture symbolic of the distant molar movement, if not a resembling image of it. Now science explains the connection between these two sets of facts to be as follows:—light-waves keep emanating from the falling stone, and intervene in countless numbers between it and the retina of the observer. When they strike the retina, they send waves therefrom along the optic nerve to that part of the brain in which the waves have concomitants in consciousness. The two sets of facts which we are specially considering are, then, it is obvious, groups of regular links in the endless chains of physical sequents concerned, and they are separated by a considerable distance from each other; and yet it is affirmed that the molecular brain movement, though itself unlike the falling stone, is accompanied by a mental representation of that fall. But what, let us ask, produces this remarkable correspondence between these remote physical sequents? A diagram will, perhaps, make their connection, or want of connection, plainer.



Let this chain represent an endless series of physical sequents, proceeding from left to right, among the links of which are *M*, the molar movement of the stone at a particular point of its fall, and *m*, the molecular movement produced by *M* in the brain, which is accompanied by *f*, the feeling or perception of the distant movement *M*. The intervening links are composed of light-waves up to *R*, the retina, and beyond *R*, of nerve-waves. Now modern science informs us that all the sequents intervening between *M* and *m* consist of movements communicated by impact from particle to particle, according to the laws of mechanics. Consequently, *m*, though a remote physical consequent of *M*, has no special connection with it, but only such as it has with all its other antecedents. It is not pretended, indeed, that *m* has any special connection with *M*; there is no reason in the physical situation why it should have; but what more reason is there that *f*, the psychical concomitant of *m*, should have such connection? Why should *f* stand in such a special relation to *M* as to be a mental representation of it alone, a single and remote antecedent among countless antecedents? Even remoter antecedents are physical causes of *f*, as much as *M* is. But myriads are nearer to *f*. Why are they a blank in the mental representation? Especially how is it that the nerve-wave which is the immediate antecedent of *m*, or *m* itself, the wave which is the inseparable concomitant of *f*, the only material facts in direct connection with the feeling,—how is it that they are in no way suggested by it, while it exhibits a vivid representation of the distant fact *M*? There is no short-cut between *M* and *f*, to bring them into immediate communication with each other. The only passage between them lies through these many antecedents, of each one of

which f might as well be a symbol as it is of M . It is not that we neglect the intervening antecedents because they are unimportant to us. We have no cognizance of the light-waves and nerve-waves of which they consist, or only come to have it by special study; and even then, these waves are not *perceived*, as M is, by sense, but only conceived by imagination.

Now if feelings situated in the brain give us indications of more or less distant material objects, whether by resembling images, or by non-resembling symbols, and if this is accomplished through the intervening physical sequents, those who give us this explanation of external perception are bound to show how it is that f , in the diagram, comes to represent M' outside the body in such a special sense that M and only M , rather than ten thousand nearer antecedents, can be *perceived*. It is not affirmed that m corresponds in any special way with M . How can it do so? But since f is not in the chain of sequences affected by M except as the concomitant of m , M can call up f only by calling up m ; and hence the tendency of M to call up f can be nothing else than a tendency to call up m . That is to say, that molar and molecular movements must correspond as much as the molar movement and the feeling do.

Then how is this singular correspondence between remote sequences to be explained? What is there in M which *tends* to produce m , and through m ,— f ? The connection between them must be either casual, or due to causes calculated to produce it. By the facts in question being connected *casually*, is meant, of course, that they are not related through causation, and are not therefore permanently conjoined, but only by a coincidence. But if the correspondence between a perception

and the object perceived were only thus accidental, no dependence could be placed on it, there would be no *tendency* in *M* to produce *m f*, and the one fact could not be a symbol of the other, for which it is essential, as Helmholtz points out, that the sign should present itself whenever the thing signified occurs. And if the correspondence is due to causes calculated to produce it, these must be either mechanical, or of some other kind. But action other than mechanical is excluded by the conception of the material universe on which we are proceeding, according to which it is made up of molecules moved by forces that operate mechanically. The connection between a perception and the object perceived must, then, be explained mechanically, if it is explained at all.

It is not necessary to raise here the question whether a material body can act directly on another body not in actual contact with it, because nobody contends for such action across distances like those which intervene between perceptions and their objects; and besides, the mechanism of perception as explained by science shows a countless series of molecules receiving and transmitting impacts as intervening steps by which the result is obtained. The object perceived exerts, therefore, only the most indirect effect on the observer, its direct action being limited to the particles of aether and air in close contiguity with it. Our common modes of expression betray us into forgetting this. We speak of objects more or less distant as exciting certain sensations or perceptions in us, when the objects themselves, because distant, can do no such thing, but only generate impulses in adjacent particles, which impulses are transmitted through innumerable agents before they reach the place where feelings arise. Strictly speaking,

it is only the last member of the series which produces the sensation. Yet we pass over all the nearer antecedents, and even call it the *property* of the distant antecedent to affect us, when, on the showing of science, it is certain of our own nerve-molecules only which affect us. This loose way of speaking is legitimate enough in ordinary language, but is misleading when used, as even Mr. Mill uses it, to describe 'what it is that the senses tell us concerning objects.'

'What we term the properties of an object,' he writes, 'are the powers it exerts of producing sensations in our consciousness. Take any familiar object, such as an orange. It is yellow; that is, it affects us, through our sense of sight, with a particular sensation of colour. It is soft; in other words it produces a sensation through our muscular feelings, of resistance overcome by a slight effort. . . . [So with other qualities.] It is affirmed that all the attributes which we ascribe to objects, consist in their having the power of exciting one or another variety of sensation in our minds; that to us the properties of an object have this and no other meaning; that an object is to us nothing else than that which affects our senses in a certain manner; that we are incapable of attaching to the word object, any other meaning. . . . This is the doctrine of the Relativity of Knowledge to the knowing mind, in the simplest, purest, and, as I think, the most proper acceptation of the words.'¹

Admirably as this passage sets forth, to general readers, a fundamental distinction of philosophy, it is a strangely inaccurate account of what the senses tell us concerning external objects. For the mechanism of perception, as explained by science, and of course

¹*Examination of Sir W. Hamilton's Philosophy*, pp. 7, 8.

known to Mr. Mill, makes it evident that no external objects have themselves the power of producing sensations in our consciousness. Facts repeatedly stated in these pages show that an orange cannot itself affect us with a particular sensation of colour or resistance. What does the orange do? Its surface particles move or resist motion, and in either case excite impulses in adjacent particles of aether or air, which these (and not the orange) transmit to others, and they again to more, and some among these waves of impulse reach at last an observer's brain. The orange has done its work when it has *started* these movements. It is *its property* to start them, and that is all; the effects these movements produce afterwards and elsewhere as they travel on, are, strictly speaking, properties of the particles then and there acting. To call them the property of the orange is like calling it the property of a galvanic battery to ring a bell or blast rocks. Those, if many other conditions are present, are remote consequences of the action of a galvanic battery, as they are of the person who employs the battery; and that is all which can be said of the sensations which an orange, or other external object, is said to excite in us. If these are its properties, so equally are other consequences of its action,—the waste of nerve-tissue which accompanies the sensations, the dispositions to eat the orange, and so on forever. Moreover, it is just as true to call it the property of the intervening aether or nerves to excite the sensation of yellow, as to call it the property of the orange to do so, the fact being, that all alike conspire to effect the result, along with ten thousand other conditions unsuspected. To single out a remote group of antecedents, and call the distant result *their property* in any special sense, is, then, quite inaccurate.

That appellation applies with truth only to the movements which the orange itself sets up in the particles adjacent to it. As a matter of convenience, no doubt the ordinary mode of expression is indispensable; but when we are enquiring '*what it is* that the senses tell us concerning objects,' that way of speaking blinds us to the difficulty, the impossibility of accounting for the supposed fact that a feeling in the brain corresponds in some special way with a distant object outside, with which it is connected only by waves transmitted by means of countless intervening objects. That connection cannot, in fact, be accounted for in a mechanical way, which yet, we have seen, is the only way by which, according to science, it can happen; there is no alternative, therefore, but to deny that any connection exists between a perception and its object, and see in this conclusion another evidence that phenomena cannot represent truly things that are. If, as Mr. Mill says, 'an object is to us nothing else than that which affects our senses in a certain manner,' then there are no such objects as we suppose, for science proves that external objects cannot affect our senses at all.

While, then, science explains that the way in which external objects excite our sensations is by the transmission of waves from point to point along the intervening distance, it is clear that the waves cannot by that means inform us of the existence of objects at such and such a distance; in other words, mechanical action will account for the production of *sensations*, but not of *perceptions*, if by these be meant the apprehension of external objects. By what means, then, do we obtain perceptions, and what character do they bear? We perceive external objects as the result of sundry *inferences*.

‘If,’ writes Mr. Lewes, ‘we rigorously separate from our perceptions all those elements not actually given in the momentary sensations, it will be evident that perception is distinguished from sensation by the addition of certain inferences: as when we perceive a substance to be hard, square, odorous, sweet, &c., from certain inferences rising out of its form, colour, &c., although we do not actually touch, smell, or taste the object. . . . I infer that the lump of white substance before me is sugar, as I infer that it rains when I see from my window water falling on the streets. In both cases the inference may be wrong. The white substance may be salt; the falling water may be the spray of the garden hose. But in each and every case of perception, a something is added to the sensation, and that something is inferential, or the assumption of some quality present in fact which is not present in sense.’¹

By the comparison of impressions derived from one sense with those derived from others, and by interpreting the significance of impressions of size, form, colour, &c., a proceeding facilitated by strong inherited tendencies to draw these inferences, we arrive at those conclusions respecting the distance and character of remote objects which we call perceptions, the whole group of which may be called into consciousness by association, if a single member of it, one characteristic sensation, arise there. That is to say, by the comparison of feelings we arrive at conclusions, themselves feelings in a wide sense, and of these consist what we call our perceptions of external objects. It is clear, then, that the mental inference does not establish any physical connection between distant sequents, does not

¹ *Biog. Hist. of Philosophy.* Introd. p. xxviii.

skip over, in some mysterious fashion, the interval between *M* and *f* in our diagram. *M* is not reached at all; but, connected with *f*, is the *persuasion* that, at a certain distance, *M* exists. The whole proceeding is mental, the supposed external object, *M*, or the orange, does not come into any physical relation with the feeling or perception of it other than that which countless other antecedents sustain. And, as pointed out before, the accuracy of our perception of the orange can never be tested by comparing it with the orange itself, because that is never present to be tested; the thing signified is known only by the sign. Not only, therefore, is there no special connection between the orange and the perception of it, nothing to justify us in saying that we perceive it, or that it has the property of exciting sensations in us; but we have no proof that it exists, for our only evidence of its existence is that our perceptions give us, what it is proved that they cannot give us—a representation of it.

See, then, the alternatives to which we are driven. If we hold what science teaches us, that external material objects are revealed to us only by the physical mechanism of perception, that amounts to saying that we do not perceive external objects at all, for we have seen that they cannot be revealed to us by mechanical action. In this way Materialism confutes its own claim to represent things as they are, and lands us in Idealism. While, on the other hand, if we maintain that by some means, necessarily not mechanical, our feelings do truly reveal to us an external world, we disavow the teaching of science that distant objects telegraph mechanically their existence to the brain, and that there is a material universe outside us, obeying mechanical laws.

§ 6. SCIENCE CANNOT EXPLAIN THE REALIZATION
OF A PURPOSE.

Professor Huxley teaches truly that modern science is gradually banishing from all regions of human thought "what we call spirit and spontaneity," but in doing so it is certainly involving the reality of the phenomenal universe in the same destruction.

We have just seen that if we superadd feelings in the brain to the material universe, it is impossible to account for the correspondence which is assumed to exist in external perception between the feeling which perceives (or its physical concomitant), and the more or less distant object perceived. It is equally impossible, if we suppose this combination of facts, physical and mental, to explain the similar correspondence which is assumed to exist between a purpose (or its physical concomitant) and its realization; as when, to take one instance out of ten thousand, I go into a particular room to fetch a particular book. The facts here are essentially similar to those just considered, with the difference that, in this case, the sequents proceed outwards from the brain, instead of inwards towards it. We grant all which the physical enquirer will ask; allow that physical continuity is not ruptured by the so-called act of volition, but that the will and intention concerned affect the result only by means of their physical counterparts in the brain. That granted, it is yet admitted on all hands that there is a correspondence between the remote sequents in question, such as to make it proper to call the fetching of the book the realization of the purpose to fetch it. That holds good, though it be allowed that the purpose has no efficacy in the matter *quâd purpose*. I ask, therefore, how this

correspondence between the intention and its accomplishment is to be explained? The scientific enquirer claims the problem as a purely physical one, for he asserts that the book is taken only because the physical changes corresponding to the purpose and volition have been physically produced in my brain.

Let the circumstances of a case like that supposed, as science interprets them, be distinctly before us. Suppose I go into a dark room, taking a lighted candle, in order to find a book. Scientifically speaking, however, it cannot be from any *purpose* that I go. The physical equivalent of the purpose is, indeed, an indispensable antecedent of my going, but its operation is altogether mechanical. And among other mechanical actions conducing to the result, are the lighting and carrying of the candle, which is done, it must be remembered, not from any knowledge that a candle will be required, that I may see in the dark, but solely in virtue of the mechanical collisions of nerve-waves in my brain, some of which have psychological equivalents which constitute that illusive knowledge or belief. So also the finding of the book is due to no mental acts of recognition and selection, but is equally the resultant of the composition of the materials and physical forces concerned, including the light-waves communicated from the candle and the book to the retina, the nerve-waves transmitted thence to the brain, and all the activities, cerebral and muscular, to which they give rise. I fetch the book I meant to find, but though purpose and conscious effort accompanied every step of the proceeding, their influence was nil; the performance was purely automatic, and would have happened as it did without consciousness. Still, here is the intention and its cerebral counterpart, stand-

ing in the following strange and contrasted relations to the act accomplished afterwards: the intention is a mental representation of the act, though contributing nothing to bring it about; the cerebral counterpart of the intention is an indispensable but remote antecedent of the act, though in no way a representation of it. To what is this remarkable correspondence due between the twofold antecedent and the distant consequent? Why should the antecedent sustain such a special relation to this remote act, rather than to countless nearer consequents? This special correspondence must be either *designed* or not. It cannot be owing to design that the act accomplishes the intention, for design is the work of intelligence, and science informs us that intelligence cannot exert the smallest influence on the course of physical events. The mental intention to fetch the book desired contributed nothing, then, to its being fetched; but that was the strictly physical resultant of the materials and forces then and there present. Nevertheless, that resultant is an exact realization of a design existing beforehand in the mind; so much so, that the conformity between them could not have been more complete had the one been shaped to suit the other; the plan is a faint mental picture, which, when realized, returns in a vivid form; those two pictures are similar; and the persuasion is universal and irresistible that intelligence accomplishes such results according to design. If it is not so, then how is the correspondence to be explained? Science teaches correctly that every step in the proceeding is accounted for by physical causation, which is never interrupted. And in physical action we do not find consequents corresponding with remote antecedents in any special sense: they are proportioned to and deter-

mined by their *immediate* antecedents, and are more or less affected indirectly by all earlier ones, but by all in the same mechanical way. And, indeed, it is not pretended that the physical counterpart of the intention corresponds to the act differently from other antecedents, though its psychical concomitant represents the act mentally, and is efficacious only on its physical side! Physically the result is accomplished as in cases where no mental element is concerned. Suppose, for example, that a village lying on the slopes of Mount Vesuvius is destroyed by an eruption of the volcano. The result is produced altogether by physical causation, and the volcano in eruption has often wrought similar effects. But can it be said that the internal disturbance of the mountain has any special correspondence with, or tendency to produce, this comparatively remote consequence—the destruction of a village? The answer is, that whenever the present circumstances are repeated approximately a like result will follow; and that the internal disturbance of the mountain, and the neighbourhood of a village, are main elements in the situation; but many other conditions are indispensable too, and all operate in the same mechanical way. There is, therefore, no special tendency in the disturbed mountain to destroy villages rather than to produce ten thousand other effects. The disturbed state of the mountain means a great tension of forces within it, which will operate in the directions of least resistance. It is the same with the brain. There, too, is a store-house of force, and a state of tension which relieves itself in the directions in which the least resistance is encountered. The physical counterpart of a purpose is an exertion of nerve-force communicating impulses which, other favouring conditions

being present, lead to the realization of the purpose; but there is no more tendency in that brain-change itself to realize the purpose, than there is in the surging forces of a volcano to destroy villages rather than to expend their fury in other directions. In one sense, all the antecedents tend to produce the results, but in no special sense does the physical counterpart of the purpose tend to do so. Yet the mental purpose, which corresponds so intimately with the act which realizes it, is called into being solely through its association with this physical counterpart, which has no special relation with the act! Here, then, is a regular and intimate correspondence between distant facts, of which there is no physical explanation, and yet no explanation other than physical can be admitted!

Take another example, such as that of a watchmaker constructing a watch according to a pattern in his mind. To that pattern the watch, when it is finished, conforms. To what is the conformity due? Like every other material structure, the watch is strictly a product of physical causation, which, in this case, includes the physical changes in the brain of the watchmaker, answering to the ideal he has in his mind; but the mental plan itself contributes nothing to its realization, and the physical equivalent of the plan, which does, is in no sense a model to work by; so that the model stands outside the series of antecedents and consequents which produce the watch, and yet the watch conforms to the model. It is clear that its conformity to the model is, in the estimate of science, a pure coincidence; there is nothing in the physical situation to bring it about; the watch would have been produced just the same if the mental ideal had never existed. Since the plan contributes in no way to the result, far less has it that

prominent and governing part in producing it which a model is conceived to have over a copy. In fact, the mental plan is no pattern at all, nor can there ever be such a thing, on the scientific theory, as the realization of a purpose. The supremacy of physical causation renders working to a plan an absolute impossibility to all but Creative Intelligence, whose designs it is conceivable that physical causation may serve.

The exclusion of all human design from the universe is a *reductio ad absurdum* of the teaching which leads to it; and modern science, as commonly interpreted, manifestly leads to that conclusion; but only because it is usual to associate with the materialistic hypothesis mental facts which, as we have repeatedly seen, are incompatible with it. Exclude them, and no impossible correspondence between purpose and its realization remains to be explained, for the *hyperphysical* fact of purpose is recognized no longer. It is the ascription of the mental concomitant of design to a particular group of physical antecedents, which brings with it the unaccountable correspondence in question. But the mental concomitant confessedly exerts no influence, if it be present; and that being so, we have seen that the assumption of its presence is gratuitous and unwarranted. Hence, if science confines itself to facts of which it has physical evidence, the difficulty before us does not arise.

§ 7. MR. SHADWORTH HODGSON'S EXPLANATION OF THE PROBLEM.

It may seem that those schemes are exempt from the difficulty just urged, which associate the mental and physical facts concerned in consciousness so intimately

that, though phenomenally two, they are essentially one. Here, it may be said, the mind, being one with the brain, accomplishes what the brain performs. Such schemes are advocated, as we have seen, by Mr. Herbert Spencer, who describes nerve-change and consciousness as "subjective and objective faces of the same thing"; by Professor Bain, who calls them a "two-sided fact," a "two-sided cause"; and by Mr. Shadworth Hodgson, who, in his work on *Time and Space*, recognizes the difficulty of supposing that mental and physical acts form two distinct sets of processes, united together, but unable to influence each other. He points out that such a view would render impossible that intercourse between mind and body of which we have constant experience. And, then, he maintains that the difficulty is removed, if we suppose that what appear to us the two processes are but different aspects of one. His distinct statement of the difficulty, and of his way of meeting it, will best enable us to judge how far he succeeds. After mentioning the impossibility of accounting, on the theories he rejects, for such facts as the shutting of the eyes to escape a feeling of pain, he proceeds:—

‘ It is not only the physical action of the sensitive
 ‘ and motor nerves that is present and operative here ;
 ‘ the feelings of pain are not only present by the side
 ‘ of, and along with these physical processes, but are
 ‘ links in the chain of events, are caused by the action
 ‘ of the sensitive nerve, and produce the action on the
 ‘ motor nerve. If not, why should exactly those actions
 ‘ be produced which withdraw the eye and the hand
 ‘ from the source of pain, the sunbeam or the candle ?
 ‘ To escape from the pain, a final cause, is plainly
 ‘ the directing power, the motive, in these actions ;

'feelings are a causative link in the series of phenomena, 'not merely an accompaniment of a series of phenomena 'in the nerves and muscles. Here, then, mind must 'react on physical bodies. How is this to be conceived ? 'It is clear that mind and physical bodies must be 'brought under some common category, or have some 'common nature.'¹

'Those who, in addition to holding this theory (that 'the association of conscious states is determined by 'their physical basis), hold also a total difference in 'kind between consciousness and its objects, would find 'a connection of the two parts of this theory of the 'laws of association very difficult: and this difficulty 'cannot be avoided in the case of voluntary redintegration, whatever may be done in that of spontaneous. 'In them both, the production of states of consciousness by states of the brain has to be conceived; and 'in voluntary redintegration, certainly, the reaction of 'states of consciousness on the brain has to be conceived 'besides. It is impossible, then, to suppose consciousness to be a mere foam, aura, or melody, arising from 'the brain, but with no re-action upon it. The states 'of consciousness are, in voluntary redintegration, links 'in the chain of physical events, or circumstances, in 'the external world. When the sun in June shines in 'at the window, I lift my hand and pull down the green 'blind. The whole proceeding is capable of 'analysis into states of consciousness, which follow one 'another according to regular observable laws. 'Unless a reaction of consciousness on the brain is introduced, the particular actions performed are meaningless, and no special cause for each or any of them can 'be assigned; for instance, what determines the brain

¹ *Time and Space*, pp. 209, 210.

'to guide the muscles to pull down the blind? Can
 'we conceive that just this phenomenon and no other
 'would follow, if every other circumstance remained
 'the same, except that the feeling of pain from the
 'heat and representation of the means to avoid it were
 'absent? If spontaneous actions are explained as
 'automatic, or as the results of the action of a
 'material organ alone, still voluntary actions cannot be
 'explained so; and this explanation of spontaneous
 'actions involves the assumption of the action of exter-
 'nal, material, tangible objects on consciousness; while
 'the corresponding explanation of voluntary actions
 'involves, besides this, the further assumption of the
 'reaction of consciousness on those objects; that is,
 'involves twice the notion of influence or impulse exer-
 'cised by one heterogeneous object on another; the two
 'objects being at the same time conceived as so hetero-
 'geneous, that the notion of their having an entirely
 'different and independent origin was adopted solely to
 'escape from the supposed difficulty of conceiving
 'either of them as arising out of the other.

'I argue, therefore, that keeping consciousness and
 'its so-called material and tangible objects apart, and
 'treating them as separate and heterogeneous objects
 'of existence, is a course which leads to insoluble con-
 'tradictions. . . . If it is maintained that neither can
 'be produced out of or by the other, because they are
 'heterogeneous, then also their mutual action and
 'reaction, when they have been produced, must be ad-
 'mitted to be inconceivable. Nor can they exist sepa-
 'rately from the very first, for then we have the same
 'inconceivability in the very first intercourse between
 'them, an intercourse which, nevertheless, is an ad-
 'mitted fact of experience. It follows, that we must

'conceive them to be different aspects of the same phenomena, that is, that qualities are feelings, and feelings qualities in their subjective and objective aspects respectively; that the series of states in the one are the same with the series of states in the other, only on its other side or aspect; and that each series is complete in itself, containing an interminable succession of causes and effects, belonging to itself, and not borrowed from the opposite aspect of the phenomena.'¹

The supposition that every mental process has as its obverse a physical process, is, as we have seen, the view generally held at present, in one form or another. Undoubtedly it is more in accordance with accepted facts than any alternative view of the connection between mind and body; and the least objectionable form of the theory is that presented in the passage just quoted, in which stress is laid on the veritable oneness of the two-sided process. But it is an illusion to suppose that this unity would afford relief from the difficulty in question. Let us see what the relief would amount to.

Mr. Hodgson argues that to treat consciousness and its so-called material objects as 'separate, and heterogeneous objects of existence, is a course which leads to insoluble contradictions,' because states of consciousness are, at least in voluntary actions, links in the chains of physical events. He instances the closing of the eyes because of the pain of strong sunlight, and the removal of the hand from the burning flame of a candle; in which actions, he points out, escape from pain is plainly the motive, the directing power; so that here feeling must be 'a causative link in the series of phe-

¹ *Time and Space*, pp. 278-283.

'nomena, not merely an accompaniment of a series of 'phenomena in the nerves and muscles.' The doctrine of the automatist is, on the contrary, that only the physical processes accompanying the pain in each case are the operative elements in producing the actions by which the pain is avoided. But this does not satisfy Mr. Hodgson, for if so, 'why,' he asks, 'should exactly 'those actions be produced which withdraw the eye and 'the hand from the source of pain, the sunbeam or the 'candle?' 'Can we conceive,' he asks again, 'that just 'this phenomenon and no other would follow, if every 'other circumstance remained the same, except that the 'feeling of pain from the heat and representation of the 'means to avoid it were absent?' Truly we cannot conceive it; the realization of this or any purpose by purely mechanical means is, as we have seen, impossible. Then how does Mr. Hodgson propose to meet the difficulty? 'Mind,' he says, 'must react on physical bodies.' And in answer to the question how this can be, he replies, that 'mind and physical bodies must 'have some common nature'; that 'the series of states 'in the one are the same with the series of states in the 'other, only on its other side or aspect; and that each 'series is complete in itself, containing an interminable 'succession of causes and effects belonging to itself, and 'not borrowed from the opposite aspect of the phenomena.' But if each series of sequents is complete in itself, there is no reaction of mind on physical bodies. If there is no borrowing from the opposite aspect of the phenomena, then the pain is not, *quâd pain*, a link in the chain of physical occurrences, but operates only on its physical side, only, that is, as a nerve change, in which capacity alone it influences events; so that if, to put Mr. Hodgson's supposition, 'every

'other circumstance remained the same, except that 'the feeling of pain from the heat and representation of 'the means to avoid it were absent,' the very same actions which withdraw the eye and the hand from the source of pain would be produced—the result he pronounces inconceivable. In other words, the course of events would, on Mr. Hodgson's theory, be wholly unaffected by the absence of the pain and the purpose to escape it, since the corresponding nerve-changes, determined solely by their physical antecedents, would of course take place. Yet his theory is adopted in order to avoid this conclusion. 'Voluntary actions,' he teaches, 'cannot be so explained.' Mr. Hodgson contends that inasmuch as the pain is supposed to be one aspect of the nerve-change which helps to bring relief from it, the pain itself helps to bring the relief. That contention would hold good if feelings and nerve-changes could act interchangeably as links in the chain of events, if the single act in which they are affirmed to unite were so constituted that now one aspect of it, and now the other, could be the operating element. But it is admitted that this is not the case. 'Each series is complete in itself,' we are told, and there is no borrowing from the opposite aspect of the phenomena. It is difficult to argue about a union like that supposed, which it is utterly impossible to represent to the imagination. Separated, to our apprehension, by what Mr. Spencer calls 'a difference which transcends all differences,' it is in the literal sense of the word inconceivable how nerve-changes and feelings can be 'different aspects of the same phenomena.' We are dealing, it must be remembered, not with a two-sided *object* or *entity*, like a billiard ball half black and half white, but with a two-sided *process* or *act*, a movement affirmed

to be also a feeling. And it is admitted that the movement holds a perfectly regular position among neighbouring movements, being physically unaffected by the fact that it is also a feeling. The nerve-changes which are the physical aspect of pain are nerve-changes in exactly the same sense as those which precede and follow them, and their character is determined exclusively by physical conditions which are essentially mechanical. That being granted, it can make no possible difference to the result whether the mental act be regarded as one with the nerve-change, or as a distinct but synchronous process. Since 'each series is complete in itself,' all physical effects are, on Mr. Hodgson's own showing, wrought by physical causes alone, and feelings are not, as such, causative links in the series of physical phenomena. Therefore the difficulty before us is not lessened in the smallest degree by ascribing to the incommensurable processes in question an unwarrantable identity. Unwarrantable, for if their difference transcends all other differences, we have more reason to regard them as distinct than any other things which seem separate. Mr. Hodgson instances the lowering of the blind to shut out the sunlight as a purposive action which would be inexplicable if the feeling of pain from the heat, and the intention to exclude it, did not influence the result. But as he teaches that the pain and the purpose operate only as regular members of a series of physical causes and effects consisting of movements, he grants that their mental character is impotent, as far as action is concerned, and that the physical events produced take place exactly as they would if they possessed no mental character. It follows that, on Mr. Hodgson's account of the matter, just as on the theory he repudiates so-

called voluntary purposive actions are inexplicable, because meaningless ; that our intentions are realized without any reason why they should be, their fulfilment merely a coincidence, the regularity of which is wholly unaccountable ! And the same is true of all forms of the opinion that mental processes are the obverse of physical processes.

In fact, Mr. Hodgson, Mr. Herbert Spencer, and all who hold this theory, do not, cannot, allow to the united process they describe, all the varied and incompatible qualities of its two aspects. They speak of the connection as if it were a union on equal terms, but when they apply the theory it turns out to be far from that. We are told that nerve-changes have mental aspects, but everything is effected exclusively by their physical characters ; the mental aspect does not influence events. We are never told that though our feelings have physical aspects, our actions are governed by the laws of mind ; though if the union in question were an equal one, the latter statement would be as fair as the former, and philosophically it is more accurate. It is never suggested that the laws of mental association regulate nerve-currents in the brain, but it is constantly implied that brain-changes determine the course of our thoughts. That shows that the united process, instead of being equal as between its mental and physical elements, is such that the mental aspect is, for all purposes of action, wholly subordinate to the physical. And, indeed, it is impossible, while we confine ourselves to realistic conceptions, as we do at present, to regard the union of the two as equal. We cannot conceive mind, working out its purposes according to mental laws, to be identical with body, working effects in strict obedience to physical laws.

Even if the conceptions were not incongruous, as they are, Realism does not give us the data for such a view. For though we have feelings as the mental counterparts of movements, we have not, in Realism, any mental counterpart of *matter*, without which, as the something which moves, we cannot imagine motion. We are accustomed, indeed, in like manner, to regard thoughts and feelings as acts of *mind*; but we cannot conceive mind apart from some particular act of mind, some thought or feeling, as we can conceive matter without movement—matter at rest. Yet we are familiar with states of unconsciousness. Hence, from the point of view of Realism, feelings lack a special mental substratum; and our intellectual necessity of supposing one leads us to regard matter as the substratum of feelings as well as movements, and so we are presented only with body moving in accordance with physical laws, certain of whose movements are supposed to exhibit mental aspects.

It is maintained, then, that among the indubitable facts of which physical science is unable to give account, even when mental processes are affirmed to be the obverse of physical processes, is the correspondence between purpose and its realization, which is a matter of universal and everyday experience. The point is of so much importance that it will be well to give one more example of the difficulty which science quite fails to explain. Unquestionably, we have intentions which we proceed to realize. Not only do we *foresee*, from our knowledge of the materials and forces collocated somewhere, that such and such results will follow, but we wish and plan to bring about certain results, and take measures to accomplish them. I want to thread a

needle, for example, and consequently, through the nervous apparatus, I adjust and set in motion the muscles of hand and eye, by which my purpose is effected. Certain brain-waves, we are told, are the physical aspect of the purpose, and contribute to the result, but they do so in a purely mechanical way, just as their physical antecedents and consequents do, and so they do not stand in any special relation to the result as the purpose does. The characteristic of the purpose, that it presents a picture to which distant consequents will conform, has nothing which corresponds to it in the equivalent brain-waves. Nevertheless, subsequently, and after the occurrence of numerous and various physical sequences, unaccompanied, as far as we know, by any mental characters, the threaded needle transmits through the eye to the brain (by means of another lengthened chain of physical sequences) a set of nerve-waves which have as their mental aspect that more vivid picture of a threaded needle, which is called a *perception*, and which exactly corresponds to the fainter picture of the same of which the former purpose or idea consisted. And if it be true, as some suppose, that the difference between sensations actually experienced, and the ideas of them, physically represented, is that the ideas are fainter nerve-waves flowing along the same channels, then we have, in the case of such a purpose as the threading of a needle and its realization, a faint nerve-wave setting up other nervous and muscular movements, and movements of external objects, till a condition of external objects is reached which sends impressions back to eye and brain that produce a nerve-wave along the old channel, *but in greater strength*, and having the *perception* of a threaded

needle as its mental aspect. Thus a strange *circuit* is completed.

But there is no *tendency* whatever in the fainter nerve-waves (by whose *movements* alone the purpose acts) to realize the purpose, or to originate a counter-impression which shall send a stronger wave along the same nerve-channel. There is no scientific explanation of these correspondences between remote facts; no reason, in the physical situation, why they should occur; physically they are simple coincidences; or rather, to physical science the correspondence in question does not exist, for the purpose, which is one of the two elements composing it, is not a physical fact at all. To physical science all brain action is reflex action, and the constant fulfilment of our intentions which takes place is purely casual. When a needle is threaded shortly after we have formed a purpose to thread it, the realization of the purpose is a mere coincidence, for the result was accomplished by physical causation alone. When a transit of Venus across the sun is seen from the other side of the globe, at the precise moment when a number of astronomers, who have gone thither, are looking that way through their telescopes, their extraordinary vigilance in that particular direction, at that particular instant, has no causal connection with the transit of the planet, but is due to physical causes alone, and its correspondence with the transit is purely fortuitous. Equally fortuitous is the daily and accurate delivery of thousands of letters by the post-office. So with any and every instance of the fulfilment of human intentions. All the achievements of mankind, little and great, from the trifling purposive actions of every day, to far-reaching schemes pursued for years by the combined exertions of multitudes, from writing a letter

or putting on a glove, to building a cathedral, commanding an army, or governing an empire, all alike take place, according to science, without the slightest help from the purpose which, in each case, precedes the result ; and the fact that all conform to antecedent purposes is a fortuitous coincidence. To this preposterous conclusion physical science is inevitably committed. It can give no account of the realization of a purpose. This is fully recognized in regard to Divine design ; but, as pointed out before, *that* may conceivably have operated at first to frame the constitution of Nature, whereas human design is absolutely excluded.

No relief from this conclusion is obtained, we have seen, by so far identifying the mental with the concomitant physical process, as to call one the obverse aspect of the other, at least not while the physical series is affirmed to be complete in itself, for that leaves physical effects due to physical causes alone. It would be different if actions were allowed to be essentially mental in character, and their physical aspect and method of action were regarded as phenomenal only ; but that would be a form of Idealism. To this, however, we are brought, as we shall see that some form of Idealism affords the only relief from the absurdities of universal and absolute Automatism.

The statement Mr. Hodgson gives to the opinion which we are considering, is open to an objection from which the similar doctrine of Mr. Herbert Spencer is free. When Mr. Spencer describes mind and nervous action as 'subjective and objective faces of the same thing,' he means that the two faces or aspects are *phenomena*, and that the single change of which they are faces is an occult fact ; for in another place he calls

it 'that ultimate reality in which subject and object are united,' all knowledge of which he declares to be impossible. It is a 'thing in itself,' and belongs to the Unknowable. This is intelligible; although, as explained before (pp. 79-81), the union of the two processes in the *Unknowable* leaves them as distinct as ever in the world of *phenomena*, with which alone science has to do. But when Mr. Hodgson describes the relation between the mental and physical processes, he says, 'We must conceive them to be different aspects of the same *phenomena*;' and again, 'each series is complete in itself,' and does not borrow 'from the opposite aspect of the *phenomena*.'¹ What are we to understand by the expression, 'different aspects of the same *phenomena*?' Does Mr. Hodgson mean to draw a distinction between the *aspects* and the *phenomena*, or does he not? If he does, the phenomenon of which the mental and physical processes are aspects constitutes a third fact; and since, by its very nature, a phenomenon *appears*, it makes a *third appearance*, where the intention is to substitute one fact for two. Or if the phenomenon be not a third appearance, it is either an occult fact, as Mr. Spencer teaches, in which case it is not a *phenomenon* at all; or it is identical with one of the two aspects, and then it ought not to be distinguished equally from both, as it is in the expression 'different aspects of the same *phenomena*.' It may seem, therefore, that the other alternative is intended, and that the different aspects are regarded as themselves the different phenomena, an interpretation favoured, perhaps, by the use of the plural *phenomena*. But how could the aspects be called different, and the

¹ *Time and Space*, p. 283.

phenomena the same, if no distinction was intended between them? In that case the phenomena would be as different as the aspects, and *sameness* could not be predicated of them at all. The expression should have been simply '*different phenomena*,' but then the sameness for which Mr. Hodgson contends would have been altogether wanting. Clearly the sameness does not lie *in the phenomena*, which, as Mr. Spencer affirms, are separated by 'a difference which transcends all differences.' If subject and object are united at all, it must be either in an occult reality distinct from both, or because one of the two aspects is itself the reality, and the other a mere phenomenon.

§ 8. ESSENTIAL IDENTITY OF HUMAN ACTIVITIES AND ORGANIC FUNCTIONS.

It follows from considerations recently urged, that, measured by the standard of physical science, the purposive actions of men are on exactly the same level as the functions of organic nature, and all those natural facts, or aggregates of facts, including the vast aggregate of the Kosmos, which have given rise to endless controversy, as to whether they are attributable to design. The controversy, as we shall see, seems to be based on a misunderstanding, and, as happens in many cases, there is truth on both sides of it, and the opposing views do not come into conflict when each is kept to its proper ground. What it concerns us to note now is the fact, that all the adaptations of means to ends which exist in nature, including the elaborate functions of organic life, belong, in the estimate of science, to the same category as the so-called intelligent actions of men; and all alike are correctly regarded, from this

point of view, as entirely due to physical causation. On the other hand, numberless functions of organic life, and above all the stupendous system of the material universe considered as a whole, presuppose intelligence to order them at least as much as those actions of men which, to science, are equally destitute of purpose, but the purposive character of which, it is preposterous to deny.

By way of classing together these strictly allied scientific facts of human activity and natural function, let us briefly call to mind the character and prevalence of function, especially in the world of organic life. Function exists universally among living forms; the organic world is so named from the fact that its members possess, or rather consist of, organs or instruments, whose operations or functions contribute to and compose the life of the system. For a very elaborate and suggestive account of the functions of organic life, the reader is referred to Mr. Herbert Spencer's work on *The Principles of Biology*; a few extracts from it here will give some idea of the complexity and rich significance of the subject.

'Under function, in its widest sense, are included
'both the statical and the dynamical distributions of
'force which an organism opposes to the forces brought
'to bear on it. In a tree, the woody core of trunk and
'branches, and in an animal, the skeleton, internal or
'external, may be regarded as passively resisting the
'gravity and momentum which tend habitually or
'occasionally to derange the requisite relations between
'the organism and its environment; and since they
'resist these forces simply by their cohesion, their
'functions may be classed as *statical*. Conversely, the
'leaves and sap vessels in a tree, and those organs which

' in an animal similarly carry on nutrition and circula-
 ' tion, as well as those which generate and direct
 ' muscular motion, must be considered as *dynamical* in
 ' their actions. From another point of view, function is
 ' divisible into the *accumulation of force* (latent in food);
 ' *the expenditure of force* (latent in the tissues and certain
 ' matters absorbed by them); and the *transfer of force*
 ' (latent in the prepared nutriment or blood), from the
 ' parts which accumulate to the parts which expend.
 ' Each of these three most general divisions
 ' includes several more special divisions. The accumula-
 ' tion of force may be separated into *alimentation* and
 ' *aeration*, of which the first is again separable into the
 ' various acts gone through between prehension of food
 ' and the transformation of part of it into blood. By
 ' the transfer of force is to be understood what we call
 ' *circulation*; if the meaning of circulation be extended
 ' to embrace the duties of both the vascular system and
 ' the lymphatics. Under the head of expenditure of
 ' force come *nervous actions* and *muscular actions*. . . .
 ' Lastly, there are the subsidiary functions which do
 ' not properly fall within any of these general functions,
 ' but subserve them by removing the obstacles to their
 ' performance: those, namely, of *excretion* and *exhala-*
 ' *tion*, whereby waste products are got rid of. Again,
 ' disregarding their purposes, and considering them
 ' analytically, the general physiologist may consider
 ' functions in their widest sense as the correlatives of
 ' tissues—the actions of epidermic tissues, cartilaginous
 ' tissue, elastic tissue, connective tissue, osseous tissue,
 ' muscular tissue, nervous tissue, glandular tissue.
 ' Once more, physiology, in its concrete interpretations,
 ' recognizes special functions as the ends of special
 ' organs—regards the teeth as having the office of

'mastication, the heart as an apparatus to propel blood ;
'this gland as fitted to produce one requisite secretion
'and that to produce another ; each muscle as the agent
'of a particular motion ; each nerve as the vehicle of a
'special sensation or a special motor impulse.'¹

Mr. Spencer passes from the lowest to the highest plants and animals, tracing, as he ascends, a regular progress 'from general, indefinite, and simple kinds of action, to special, definite, and complex kinds of action,' presenting what Milne-Edwards has termed 'the physiological division of labour.'

'Given an originally homogeneous portion of protoplasm, and it follows from the general laws of evolution ; first, that it must lose its homogeneity ; and, second, that the leading dissimilarities must arise between the parts most dissimilarly conditioned—that is, between the outside and the inside. The exterior must bear amounts and kinds of force unlike the amounts and kinds which the interior bears ; and from the persistence of force it follows inevitably unlike effects must be wrought on them—they must be differentiated.'²

'The higher plants variously display the like fundamental distinction between outer and inner tissues. Each leaf, thin as it is, exemplifies this differentiation of the parts immediately in contact with the environment from the parts not in immediate contact with the environment. . . . An unlikeness more marked in kind, but similar in meaning, exists between the bark of every branch, and the tissues it clothes. . . . How clearly this heterogeneity of structure and function is conse-

¹ *The Principles of Biology*, vol. I., § 56.

² *Ibid.*, vol. II., § 268.

‘quent upon intercourse with the environment every tree and shrub shows. The young shoots, alike of annuals and perennials, are quite green and soft at their extremities. Among plants of short lives, there is usually but a slight development of bark ; such traces of it as the surface of the axis acquires being seen only at its lowermost or oldest portion. In long-lived plants, however, this formation of a tough opaque coating takes place more rapidly, and shows us distinctly the connection between the degree of differentiation and the length of exposure.’¹

Mr. Spencer proceeds to trace increasing differentiations among the outer, and then among the inner tissues of plants, as he ascends to higher orders, and then treats of the correlative fact of integration, or the co-ordination of actions to make up a system of mutually dependent functions, exhibiting a great physiological division of labour.

‘The inferior Algae, along with little unlikeness of parts, show us little mutual dependence of parts. Having surfaces similarly circumstanced everywhere, much physiological division of labour cannot arise ; and therefore there cannot be much physiological unity. . . .

‘Physiological integration reaches its climax among Endogens and Exogens. In them we see interdependence throughout masses that are immense. Along with specialized appliances for support and transfer, we find an exchange of aid at great distances. We see roots giving the vast aërial growth a hold tenacious enough to withstand violent winds, and supply water enough, even during periods of drought ; we see a stem and branches of corresponding strength for

¹ *The Principles of Biology*, vol. II., § 270.

‘upholding the assimilating organs under ordinary and
 ‘extraordinary strains ; and in these assimilating organs
 ‘we see elaborate appliances for yielding to the stem
 ‘and roots the materials enabling them to fulfil their
 ‘offices. As a consequence of which greater integra-
 ‘tion accompanying the greater differentiation, there
 ‘is ability to maintain life over an immense period
 ‘under marked vicissitudes.’¹

Among animals a similarly increasing subdivision and mutual dependence of functions may be traced as we ascend in the scale.

‘Beginning with the feebly differentiated sponge, of
 ‘which the integration is also so feeble that cutting off
 ‘a piece interferes in no appreciable degree with the
 ‘activity and growth of the rest, it is undeniable that
 ‘the advance is through stages in which the multi-
 ‘plication of unlike parts having unlike actions, is
 ‘accompanied by an increasing interdependence of the
 ‘parts and their actions ; until we come to structures
 ‘like our own, in which a slight change initiated in one
 ‘part will instantly and powerfully affect all other
 ‘parts, will powerfully convulse an immense number
 ‘of muscles, send a wave of contraction through all the
 ‘blood-vessels, awaken a crowd of ideas with an
 ‘accompanying gush of emotions, affect the action of
 ‘the lungs, of the stomach, and of all the secreting
 ‘organs.’²

It will illustrate our contention that human activities have the same essential character as the functions of organic nature, to which, indeed, in strict language, they belong, to quote the parallelism which Mr. Spencer traces between them.

¹ *The Principles of Biology*, vol. II., § 284.

² *Ibid.*, § 309.

' Certain physiological differentiations make possible
 ' certain physiological integrations ; and conversely,
 ' these integrations make possible other differentiations.
 ' Besides the waste products that escape through the
 ' lungs, there are waste products that escape through
 ' the skin, the kidneys, the liver. The blood has sepa-
 ' rated from it in each of these structures, the particular
 ' product which this structure has become adapted to
 ' separate, leaving the other products to be separated
 ' by the other adapted structures. How have these
 ' special adaptations been made possible ? By union
 ' of the organs as recipients of one circulating mass of
 ' blood. While there is no efficient apparatus for
 ' transfer of materials through the body, the waste pro-
 ' ducts of each part have to make their escape locally ;
 ' and the local channels of escape must be competent to
 ' take off indifferently all the waste products. But it
 ' becomes practicable and advantageous for the differ-
 ' ently-localized excreting structures to become fitted
 ' to separate different waste products, as soon as the
 ' common circulation through them grows so efficient
 ' that the product left unexcreted by one is quickly
 ' carried to another better fitted to excrete it. So that
 ' the integration of them through a common vascular
 ' system, is the condition under which only they can
 ' become differentiated. . . .

' Perhaps the clearest idea of the way in which
 ' differentiation leads to integration, and how, again,
 ' increased integration makes possible still further dif-
 ' ferentiation, will be obtained by contemplating the
 ' analogous dependence in the social organism. While
 ' it has no roads, a country cannot have its industries
 ' much specialized : each locality must produce, as best
 ' it can, the various commodities it consumes, so long

'as it has no facilities for barter with other localities.
 'But the localities being unlike in their natural fit-
 'nesses for the various industries, there tends ever to
 'arise some exchange of the commodities they can
 'respectively produce with least labour. This ex-
 'change leads to the formation of channels of communi-
 'cation. The currents of commodities once set up,
 'make their footpaths and horse-tracks more permeable,
 'and as fast as the resistance to change becomes less,
 'the currents of commodities become greater. Each
 'locality takes more of the products of adjacent
 'ones, and each locality devotes itself more to the par-
 'ticular industry for which it is naturally best fitted :
 'the functional integration makes possible a further
 'differentiation. This further functional differentiation
 'reacts. The greater demand for the special product
 'of each locality excites improvements in production,
 'leads to the use of methods which both cheapen
 'and perfect the commodity. Hence results a still
 'more active exchange ; a still clearer opening of the
 'channels of communication ; a still closer mutual
 'dependence. . . . These actions and reactions con-
 'tinue until the various localities, becoming greatly
 'developed and highly specialised in their industries,
 'are at the same time functionally integrated by a
 'network of roads, and finally railways, along which
 'rapidly circulate the currents severally sent out and
 'received by the localities. And it will be manifest
 'that in individual organisms a like correlative pro-
 'gress must have been caused in an analogous way.'¹

In other ways this parallelism holds good :

'Probably the general reader cannot in any other
 'way obtain so clear a conception of functional develop-

¹ *The Principles of Biology*, vol. II., § 307.

‘ment in organisms, as he can by tracing out functional development in societies: noting how there first comes a distinction between the governing class and the governed class; how while in the governing class there slowly grow up such differences of duty as the civil, military, and ecclesiastical, there arise in the governed class, fundamentally industrial differences like those between agriculturists and artizans; and how there is a continual multiplication of such specialized occupations, and specialized shares of each occupation.’¹

It is the same in regard to the integration of differentiated functions:

‘While in well-developed creatures the distinction of functions is very marked, the combination of functions is very close. . . . From instant to instant, digestion proceeds only on condition that there is a supply of aerated blood, and a due current of nervous energy through the digestive organs. That the heart may act, it must from instant to instant be excited by discharges from certain ganglia; and the discharges from these ganglia are made possible only by the conveyance to them, from instant to instant, of the blood which the heart propels.

‘It is not easy to find an adequate expression for this double redistribution of functions. It is not easy to realize a transformation through which the functions thus become in one sense separated and in another sense combined, or even interfused. Here, however, as before, an analogy drawn from social organization helps us. If we observe how the increasing division of labour in societies is accompanied by a closer co-operation; and how the agencies of different

'social actions, while becoming in one respect more distinct, become in another respect more minutely ramified through each other; we shall understand better the increasing physiological co-operation that accompanies increasing physiological division of labour.'¹

The analogy thus ingeniously traced between social organization and the interdependent functions of one of the higher plants or animals, is more than a superficial resemblance, more than a case of similar relations among beings of a totally different order, because possessed of intelligence. For we have seen that it is the legitimate contention of physical science, that intelligence, as such, is altogether destitute of influence on events; and our argument has been that, because intelligence is destitute of influence, because it leaves no physical trace, science has no right to recognize its presence; at any rate, its presence is recognized in the absence of scientific evidence for it. It follows that, from the point of view of science, all social activities are natural functions in the same sense and to the same extent as physiological changes, and are equally subject to physical laws. Since all the operations effected by, and occurring in, each human body take place without any rupture of physical continuity, since even the changes in his brain are strictly of a reflex and physical kind, a man is to science, just as a plant is, an assemblage of material organs whose varied and inter-related functions subserve the life of the structure as a whole. When, therefore, a further aggregation of human organisms takes place, in virtue of which even more complex interactions and interdependences arise among individuals, these larger systems are as strictly

¹ *The Principles of Biology*, vol. II., § 59.

assemblages of material organs performing purely physical functions, as the relatively smaller but still complex individual organisms. Hence, a society of mutually dependent men, performing different functions in the body politic, is, in the view of science, a natural system of essentially the same kind as a huge tree, with its elaborately specialized and integrated organs of roots, stems, branches, and leaves. And we can say of the society exactly what we have quoted Mr. Spencer as saying of the tree—‘as a consequence of ‘which greater integration accompanying the greater ‘differentiation, there is ability to maintain life over ‘an immense period under marked vicissitudes.’

It can hardly be alleged that the parallel is invalidated by the distances which separate the members of a society, as compared with the molecular continuity which a tree exhibits ; for in the first place, the spaces between individuals are molecularly occupied, or at least filled up with a medium which serves for communication between them, and this is true also of the molecular interspaces of a tree ; and further, we have, in the solar and starry systems, examples of stupendous masses of matter separated by overwhelming distances, which are none the less mutually-dependent wholes.

Since, then, physical science can draw no essential distinction between the activities of societies of men and the functions of animals and plants, since all human activities, as known to science, are no other than physical functions,—the organization of society cannot correctly be adduced as throwing light on the constitution of vegetable and animal organisms, for the social fabric and its functions belong to the same category, are a case of the same description.

We have, then, in the plant and the animal a division

of labour, rendering possible the life and well-being of the aggregate of organs—the *system*, precisely such as exists in societies of men; and in the estimate of science the two are equally under the sway of physical causes and effects. The parallel between them is, therefore, in this respect, complete; and what holds good of one holds good of the other. That is to say, if teleology has no place in the structures and functions of animals and plants, if final causes are excluded from them—and the most elaborate adaptation of means to ends gives no indication of design—then there is no such thing as design in the activities of a man, or in those of a society. Conversely, if, in human societies and individual men, there is undeniably the employment of means to accomplish designed ends, as in the machinery of government, the processes of manufacture, the intricate organization of the railway systems and the Post Office—and the innumerable purposive actions of every life—it is equally undeniable that, in the varied organs and functions which contribute to the life of a tree, there is also what answers to a final cause. If it be said that physical causation is adequate to produce the result in the last case, and that there is no scientific evidence of anything beside, we have seen that this may be said with equal truth of all the other cases. If it is impossible to combine the action of intelligence with physical causation in the case of a tree, so it is in the case of all human activities. If, nevertheless, we must predicate both agencies where human activities are concerned, we cannot make their seeming incompatibility a bar in the case of other natural functions. The admission that in some way or other the action of intelligence goes along with physical causation in the case of men, disqualifies us from

refusing to admit that the two may co-operate in external nature. We cannot distinguish between the cases, and say, that mind appears in man but not in nature; for science does not endorse this distinction. Physical science finds no more evidence of mind in man than in external nature. As known to science, man is in every sense a part of nature. In other words, if the combination of varied means to accomplish certain ends in the works of man compels us to suppose that intelligence devised the combination, then, since, in the case of a plant and its functions, we have this same fact, viz., the combination of varied means which accomplish a certain end, a like obligation will compel us to conclude that intelligence devised that combination too. For so far from there being anything in the achievements ascribed to human intelligence which marks them off from the functions of organic nature, and renders the supposition of intelligence necessary in the one case and unnecessary in the other, it is the legitimate conclusion of science that physical continuity is no more interrupted in the human organism than anywhere else, but that everything proceeds there as if consciousness were absent.

§ 9. EVIDENCES OF DESIGN AS MANIFEST IN NATURE
AS IN THE ACTIONS OF MEN.

If it be supposed that the adaptations of external nature are less striking than the purposive actions of men, and give, therefore, less convincing indications of design, let the following remarkable passage from Mr. Darwin's work on the *Fertilization of Orchids* furnish the reply:—

‘The more I study nature, the more I become impressed with ever-increasing force with the conclusion, that the contrivances and beautiful adaptations slowly acquired through each part occasionally varying in a slight degree but in many ways, with the preservation or natural selection of those variations which are beneficial to the organism under the complex and ever varying conditions of life, transcend in an incomparable degree the contrivances and adaptations which the most fertile imagination of the most imaginative man could suggest with unlimited time at his disposal.’¹

In illustration of this statement, a few extracts from this deeply interesting volume may be given :—

‘As in no other plant, or indeed in hardly any animal, can adaptations of one part to another, and of the whole to other organized beings widely remote in the scale of nature, be named more perfect than those presented by this Orchis [Pyramidalis], it may be worth while briefly to sum them up. As the flowers are visited both by day and night-flying Lepidoptera, I do not think that it is fanciful to believe that the bright purple tint (whether or not specially developed for this purpose) attracts the day-fliers, and the strong foxy odour the night-fliers. The upper sepal and two upper petals form a hood protecting the anther and stigmatic surfaces from the weather. The labellum [a petal called the lower lip] is developed into a long nectary in order to attract Lepidoptera, and we shall presently give reasons for suspecting that the nectar is purposely so lodged that it can be sucked only slowly, in order to give time for the curious chemical quality of the viscid matter on the under side of the saddle setting hard and dry. He who will insert a

¹ p. 351.

'fine and flexible bristle into the expanded mouth of the
'sloping ridges on the labellum will not doubt that they
'serve as guides ; and that they effectually prevent the
'bristle or proboscis from being inserted obliquely into
'the nectary. This circumstance is of manifest import-
'ance, for, if the proboscis were inserted obliquely, the
'saddle-formed disc would become attached obliquely,
'and after the compounded movement of the pollinia
'they could not strike the two lateral stigmatic
'surfaces.

'Then we have the rostellum [a modified stigma, to
'a removeable portion of which, furnished with viscid
'matter, the pollen masses are attached] partially clos-
'ing the mouth of the nectary, like a trap placed in a
'run for game ; and the trap so complex and perfect,
'with its symmetrical lines of rupture forming the
'saddle-shaped disc above, and the lip of the pouch
'below ; and lastly, this lip so easily depressed that the
'proboscis of a moth could hardly fail to uncover the
'viscid disc and adhere to it. But if this did fail to
'occur, the elastic lip would rise again and recover, and
'keep damp the viscid surface. We see the viscid
'matter within the rostellum attached to the saddle-
'shaped disc alone, and surrounded by fluid, so that the
'viscid matter does not set hard till the disc is with-
'drawn. Then we have the upper surface of the saddle,
'with its attached caudicles, also kept damp within the
'bases of the anther cells, until withdrawn, when the
'curious clasping movement instantly commences,
'causing the pollinia to diverge, followed by the move-
'ment of depression, which compounded movements
'together are exactly fitted to cause the ends of the two
'pollinia to strike the two stigmatic surfaces. These
'stigmatic surfaces are sticky enough not to tear off the

‘whole pollinium from the proboscis of the moth, but
 ‘by rupturing the elastic threads to secure a few packets
 ‘of pollen, leaving plenty for other flowers.’¹

Of the visits of bees to *Spiranthes Autumnalis*, Mr. Darwin writes :—

‘The bees always alighted at the bottom of the spike,
 ‘and, crawling spirally up it, sucked one flower after
 ‘the other. I believe humble bees generally act thus
 ‘when visiting a dense spike of flowers, as it is most
 ‘convenient for them ; in the same manner as a wood-
 ‘pecker always climbs up a tree in search of insects.
 ‘This seems a most insignificant observation ; but see
 ‘the result. In the early morning, when the bee starts
 ‘on her rounds, let us suppose that she alighted on the
 ‘summit of the spike ; she would surely extract the
 ‘pollinia from the uppermost and last opened flowers ;
 ‘but when visiting the next succeeding flower, of which
 ‘the labellum in all probability would not as yet have
 ‘moved from the column (for this is slowly and very
 ‘gradually effected), the pollen masses would often be
 ‘brushed off her proboscis and be wasted. But nature
 ‘suffers no such waste. The bee goes first to the lowest
 ‘flower, and, crawling spirally up the spike, effects
 ‘nothing on the first spike which she visits till she
 ‘reaches the upper flowers, then she withdraws the
 ‘pollinæ ; she soon flies to another plant, and, alight
 ‘ing on the lowest and oldest flowers, into which there
 ‘will be a wide passage from the greater reflexion of
 ‘the labellum, the pollinia will strike the protuberant
 ‘stigma : if the stigma of the lowest flower has already
 ‘been fully fertilized, little or no pollen will be left on
 ‘its dried surface ; but on the next succeeding flower,
 ‘of which the stigma is viscid, large sheets of pollen

¹ pp. 28-31.

‘will be left. Then as soon as the bee arrives near the summit of the spike she will again withdraw fresh pollinia, will fly to the lower flowers on another plant, and fertilise them ; and thus, as she goes her rounds and adds to her store of honey, she will continually fertilise fresh flowers and perpetuate the race of our autumnal spiranthes, which will yield honey to future generations of bees.’¹

Again :—

‘The anther cells [of *Listera ovata*] open early, leaving the pollen masses quite loose, with their tips resting on the concave crest of the rostellum. The rostellum then slowly curves over the stigmatic surface, so that its explosive crest stands at a little distance from the anther ; and this is very necessary, otherwise the anther would be caught by the viscid matter, and the pollen for ever locked up. This curvature of the rostellum over the stigma and base of the labellum is excellently well adapted to favour an insect striking the crest when it raises its head, after having crawled up the labellum, and licked up the last drop of nectar at its base. . . . The crest of the rostellum is so exquisitely sensitive, that a touch from a most minute insect causes it to rupture at two points, and instantaneously two drops of viscid fluid are expelled, which coalesce. This viscid fluid sets hard in so wonderfully rapid a manner that it rarely fails to cement the tips of the pollinia, nicely laid on the crest of the rostellum, to the insect’s forehead. . . . The pollen masses, when once cemented to an insect’s forehead, will generally remain firmly attached to it until the viscid stigma of a mature flower removes these encumbrances from the insect, by rupturing the weak elastic threads by

¹ pp. 127-129.

‘which the grains are tied together, receiving at the same time the benefit of fertilization.’¹

Of another genus Mr. Darwin asks:—

‘How then does nature act? She has endowed these plants with what must be called, for want of a better term, sensitiveness, and with the remarkable power of forcibly ejecting their pollinia to a distance. Hence, when certain definite points of the flower are touched by an insect, the pollinia are shot out like an arrow which is not barbed, but has a blunt and excessively adhesive point. The insect, disturbed by so sharp a blow, or after having eaten its fill, flies sooner or later to a female plant, and, whilst standing in the same position as it did when struck, the pollen-bearing end of the arrow is inserted into the stigmatic cavity, and a mass of pollen is left on its viscid surface. Thus, and thus alone, at least three species of the genus *Catasetum* are fertilized.’²

Lastly, we read:—

‘In my examination of Orchids, hardly any fact has so much struck me as the endless diversity of structure, the prodigality of resources for gaining the very same end, namely, the fertilization of one flower by the pollen of another. The fact to a certain extent is intelligible on the principal of natural selection. As all the parts of a flower are coordinated, if slight variations in any one part are preserved from being beneficial to the plant, then the other parts will generally have to be modified in some corresponding manner. But certain parts may not vary at all, or may not vary in the simplest corresponding manner, and those variations, whatever their nature may be, which will bring all the parts

¹ pp. 150-152.

² pp. 212, 213.

‘into more perfect harmony with each other, will be ‘seized on and preserved by natural selection.’¹

It may be urged that Mr. Darwin’s object in this volume is, as expressed in the last paragraph, to show that these and like remarkable examples of adaptation might be brought about by means of natural selection, and therefore do not require the supposition that intelligence contrived them. Unquestionably that is his scientific explanation of their production, and it is so accordant with the facts as to find increasing acceptance. But these examples have been adduced here, not to throw any doubt on Mr. Darwin’s theory, which, as a *scientific* theory, is perfectly legitimate, and strongly, if not conclusively, supported, but to direct attention to the fact that the extraordinary contrivances exhibited by plants, and especially by Orchids, bear such a relation to the productions of human skill as to call forth Mr. Darwin’s forcible and authoritative assertion, that they ‘transcend in an incomparable degree the contrivances and adaptations which the most fertile imagination of the most imaginative man could suggest with unlimited time at his disposal.’²


It may be doubted whether Orchids stand first among plants in regard to the adaptations they exhibit; if they do, it is certain they are far from standing alone, that they do but furnish eminent instances of the contrivance which prevails throughout the vegetable world. And it need not be said that the animal world, and especially that more familiar part of it, the crowning marvel of the human organism, is replete with examples of adaptation to which Mr. Darwin’s statement might be applied with at least equal force and truth. Further, reasons have been given for

¹ pp. 348, 349.

² p. 351.

regarding an organized society of human beings as an aggregate of specialized and interdependent organisms in the same sense in which a tree is. And it is obvious that relations of interdependence, though specially characteristic of the world of organized beings, are by no means confined to them. Adaptations as striking exist between living things and the conditions surrounding them, which Mr. Spencer aptly terms their environment; and we may say the same, in a more general sense, of the various constituents of the earth, which are closely correlated and ever interacting, and so arranged as to render the world an ordered whole. This is true down to the molecular systems of which the microscope and spectroscope inform us. Moreover, the dependence of the earth on the sun, and of the sun on objects external to himself, not least on the medium by means of which his mighty influences are diffused through and beyond the system he governs, a dependence which manifestly holds good also of every star, compels us to regard the material universe as one mighty aggregate, composed of parts infinitely diversified and correlated.

It would seem, then, that while the higher plants and animals are composed of aggregates of simpler organisms, more and more diversified in function, and interdependent as we ascend, and each may be regarded as a complex system whose different organs subserve the maintenance of the whole, we may also see illustrations of the same thing at opposite extremes of the scale of nature. If a molecule consisting of two ultimate atoms be taken as the lowest example of a material system, there are molecules of every higher degree of complexity till their constituent atoms reach hundreds and thousands, and are subject to various



internal changes, and at least approach in character the lowest living organisms. While, in the opposite direction, we may regard the earth, and even the material universe, as one mighty system, maintained by the co-operation of its multitudinous parts. In a word, pause where we will in the great scale of being, from a binary molecule up to the entire Kosmos, we shall find at every step aggregates whose members serve one another, and in turn take their places as subservient members of larger and more complex systems.

If, then, Mr. Darwin, taking an example so low down in this mighty scale as the little system of a plant, is justified in saying that its contrivances and beautiful adaptations 'transcend in an incomparable degree the contrivances and adaptations which the most fertile imagination of the most imaginative man could suggest with unlimited time at his disposal,' with what overwhelming force this assertion must be made respecting the vast whole of the ordered earth, and the vaster whole of the starry heavens!

Now to this prodigious series of inter-related material systems, composing the all-embracing Kosmos, human organisms and human societies in the strictest sense belong, according to the view of science; for since it discovers no rupture of physical continuity anywhere, the cases in which consciousness is supposed to be present resemble the cases in which it is absent, so far as the production of effects is concerned. Hence the accomplishment of designs framed by intelligence is neither more nor less possible to individuals and societies of men, than in regard to other portions of the great material system to which they belong. And therefore the case of human works is the critical case

which must govern the problem of design. The so-called achievements of human intelligence are series of physical actions combining to accomplish an end, like the functions of organic nature, and the aggregate of activities which make up the Kosmos. Indeed, to speak strictly, human achievements are themselves simply functions of organic nature, for they are operations of the purely automatic organism of the human body. The nervous system is one of its organs, and in combination with other organs effects all which man does. The decisive question is, then, have purpose and intelligence any part in the works of men? If not, purpose and intelligence are wholly banished from the universe as known to science, and the regular but impotent facts of purpose which precede the achievements of men, are quite inexplicable, and the conformity between the two an effect without a cause. While if purpose and intelligence do operate on human affairs, there is, as we have seen, superior evidence of their presence in other adaptations of nature, for human achievements (in the material world) stand comparatively low in the mighty series of co-operative acts to which they belong. So that the question seems to be reduced to the following alternatives: If, accepting the guidance of physical science, we deny that design and intelligence produce the countless adaptations of external nature, it is not competent to us to regard as purposive any of the actions of men, but we must hold them to be as purely automatic, unintelligent, and unconscious, as the changes of a plant and the movements of a star. While if we admit that intelligence and purpose have any part in the actions of men, who are integral members of the material system, we set aside all the scientific argu-

ments against the operation of intelligence elsewhere, and acknowledge its compatibility with physical causation. The proper choice to make in presence of these alternatives is obvious. Purpose and intelligence are nowhere to be found in the material universe, *scientifically considered*. There is no more evidence of them, or room for them, among the productions of human skill, than among the contrivances of external nature. This conclusion of the scientist seems unquestionable, and he must be challenged to abide by it in all cases, and at all costs, though it prohibits him from recognizing a single fact of consciousness. To disallow it would be to assume that physical continuity is interrupted in every such case, in the face of experience practically universal, and to suppose an act which it is impossible even to imagine, a movement originated by a thought. Let us understand, however, exactly what it is to which we are committed. Of the *fact* that the varied functions of a plant promote its life as a whole, that the varied actions of a watchmaker contribute to the production of a watch, and that the division of labour in the social organization is indispensable to the life of the society, there is no question. The only question is, to what, in each case, is this adaptation to a τέλος due? Is it designed? Is it the work of purpose and intelligence? Or is it effected wholly by the mechanical action of physical causation? Up to a certain point the answer to this question seems perfectly clear. In the social organism, and in the acts of the individual man, just as in the plant and in the Kosmos at large, science finds every indication that physical causation is adequate to account for every physical change, or set of changes. From the scientific point of view, no other influence is necessary or admissible.

It might be urged as an objection to regarding certain selected results in nature as accomplished by design, that they are brought about in the same way as ten thousand accompanying circumstances are, which nobody regards as designed. For example, the adaptation of the roots of a plant to the soil in which they lie, and of its leaves to the surrounding air, shows contrivance and indicates design ; but that each particular leaf should be exactly where it is, and be composed of the particular atoms which are its present constituents rather than of other atoms, these we should call coincidences, in the sense of their not seeming to belong to the design. Yet the general structure of a plant, as well as its particular constituents, are resultants of the materials and forces collocated there. So the form of a building is designed by the architect, but it was no part of his design that this particular stone should occupy this particular place. This example, drawn from the works of man, shows that whatever strength this objection has, lies equally against all instances of human purpose. It is no part of the builder's plan that this or that particular stone, rather than other similar stones, should occupy the places they do, yet their being where they are is a consequence of the realization of his plan, like ten thousand other occurrences which result from its fulfilment, though not included in his intention. So I go into the town in order to visit a certain shop, and on the way meet hundreds of people in the streets, bent on equally definite errands ; but that we should meet each other at those particular points in the way is a casual circumstance as far as our intentions were concerned, though an inevitable resultant of the physical situation. In fact, the

objection just considered proceeds on a prevalent error. It assumes that design *as a mental fact* is held to be a cause of certain material phenomena, in the same sense as physical antecedents are causes.

No doubt this is the supposition commonly held, and it is open, not only to the objection just urged, but to the invincible array of arguments by which science resists any assumed interruption of physical continuity. Moreover, even if the untenable supposition were granted, that the mental fact, purpose, is a cause in the same sense and way as a physical antecedent, it would, if it operated so, have no tendency to secure its fulfilment, for the sake of which alone a causative influence is ascribed to it. For a physical cause, so far as we know it, is an antecedent affecting its immediate consequents according to mechanical laws, and we have seen that such an antecedent could not mould distant consequents to a plan as a purpose is supposed to do. The supposition, therefore, is useless, as well as gratuitous.

On the one hand, then, science forbids the supposition that a purpose stands related to its realization in the same way that physical causes stand related to their effects; and we have just seen that if it were otherwise, a purpose could not contribute to its fulfilment as it is supposed to do, for it would operate only as a physical antecedent does; and this is as true of human purposes as of design in nature.

On the other hand, it is indubitable that human purposes are fulfilled every day; that we are in the constant habit of performing, and of depending securely on our ability to perform, actions which, in the estimate of science, are wholly due to physical causation. If these counter statements are both true,

it follows that design and purpose must effect their ends in some hyperphysical way; that they are not physical causes, and therefore science can take no cognizance of them, but—shall we say?—*efficient* causes, or rather *the symbols in consciousness of such*. And this holds good outside, as well as within the domain of human contrivance. For when it is affirmed that the adaptations of nature are due to design, no more is meant than that what corresponds to purpose in human actions has operated there. It is not, or need not be, implied that design operates in the way that physical causes do, but only in some way accordant with its very different nature and influence. We are obliged to assume this in regard to human actions, where the causative influence of purpose is indubitable, and no more is required, and no less can be granted, in the case of the countless other contrivances, many of them still more remarkable, which belong to the same material system.

At any rate, it is plain that those who deny the operation of design in nature because it does not stand related to its supposed effects as physical causes do to theirs, are bound to deny all efficacy to human intentions, which, *as such*, are equally incapable of affecting events as physical causes do. That conclusion is opposed to the irresistible conviction of every man that it is his constant practice to shape his actions according to his purposes; and if this conviction be pronounced an illusion, the bold man who says so has then to explain the unquestionable fact that in countless cases of daily occurrence we are at least able correctly to *foresee* that such and such actions will take place, which we mistakenly think we take effectual measures to perform. Let us take an example or two of the most ordinary

kind: I purpose to write a letter, or appoint to meet a friend; and, barring unusual accidents, I can reckon confidently on fulfilling my engagement, and on writing a letter which shall accurately express certain definite thoughts. Now, if intentions exert no influence on the course of events, these intentions to meet a friend, and to write a particular letter, can contribute nothing to bring about these results. Then how is it that, being powerless to accomplish what I intend, I am yet able to foresee with practical certainty that my intentions will be realized? Some explanation of this remarkable and habitual foresight ought to be forthcoming. It is the incontestable conclusion of science that all is due to physical causation; and, in such cases, the physical causes concerned include the complicated collisions of nerve-waves in the brain which are the physical concomitants of purposive actions. It is needless to say that our foresight does not come of ability to trace and anticipate the results of these collisions, for we are wholly ignorant of their character. We have found by *experience* what happens in such circumstances, and will happen. It is equally impossible to regard as *coincidences* cases of conformity between intentions and their fulfilments which are so regular and reliable as to beget an irresistible conviction that the intentions bend events into harmony with them. Then how is it, if volition is powerless over events, that we can predict the fulfilments of many of our intentions as correctly as if we had considerable power to realize them?

Once more. One of the standing problems raised by the apparently complete subjection of nature to physical causation, has been, and is, the consequent impossibility of such Divine control over events as might give efficacy to the prayers of men. On the

one hand is the almost universal and quite ineradicable impulse to pray, supported by the weighty consideration that to refuse to do so, for the reason stated, would be to deny to the Almighty an influence over events which, as a matter of fact, we must attribute to our fellow-creatures, which it would disturb the fundamental convictions on which society reposes, practically to deny to them. On the other hand, there is science, asserting, and compelled to assert, the absolute despotism of physical law.

But since, as we have seen, man, in the estimate of science, is strictly a part of nature, and therefore completely subject to her laws, all human actions are determined by physical causation in the same sense, and to the same extent as all the other movements of matter. Consequently it is just as impossible, according to scientific reasoning, that requests addressed to men should be answered as that prayers addressed to God should be. Any request which I make to a friend passes in vibration to his ear or eye, and thence on to his brain, but all these changes affect his physical organism in a purely mechanical way. It is true that the nerve-changes in his brain, which correspond to the request as he receives it, contribute as physical causes to the action which fulfils the request. But though the mental aspect of those brain-changes be *a request*, their physical aspect, which alone is operative in the physical world, is no such thing ; it bears not the remotest resemblance to a request, but is merely a series of nerve-waves passing by impact along certain nerve-channels. The request, *as a request and a mental fact*, is powerless to contribute towards its fulfilment in the smallest degree. Therefore the circumstance that the fulfilment corresponds to the wish in the petitioner's

mind is a conformity inexplicable physically, like that between a purpose and its realization. The fulfilment is wholly due to physical causation, and its agreement with the request is, in the view of science, a mere coincidence between facts connected by no causal tie. For there is not, in the physical aspect of the request, as a group of nerve-waves, any special tendency to produce the distant movements of the fulfilling action. They depend on the entire physical situation immediately antecedent to them.

Our lengthened examination of the related subjects of the purposive actions of men and the functions of external nature seems to show that they belong to the same category, and raise the same problems, which must receive the same solution. Nobody can pretend to doubt that men have intentions, and can reckon confidently, in numberless cases, on their being realized. If it were not so, the character of our life would be entirely changed. It would not be human life as we know it. But it is the legitimate conclusion of science that all human actions, like all the changes of external nature, are due to physical causation. The cases are more than similar, they are identical, for man, in the estimate of science, is an integral part of nature, and his actions are strictly natural functions. Hence there is no more and no less room for the operation of purpose in human affairs than for the operation of design in nature. If design is admitted in the one case it cannot be denied in the other. We have seen that the consistent course for science to take would be altogether to ignore facts of mind, for which it cannot show any physical evidence. If that course be taken, the insoluble problem of the habitual conformity between our purposes and their fulfilments does not arise, because

the existence of purpose is not recognized. If, however, according to the unsatisfactory compromise which finds favour at present, the influence of purpose over events is denied, but the illusive consciousness of it is recognized, the difficulty, although changed, is neither removed nor diminished. For then, instead of purpose, to which realization conforms, we have foresight of what our automatic organisms are going to do, of which it is impossible to give a scientific account. It is, then, our conclusion that the conformity habitually observable between our purposes and their fulfilments, being incapable of scientific explanation, furnishes an additional confutation of the claim of Materialism, on which science builds, to represent things as they are.

§ 10. SCIENCE FAILS TO EXPLAIN THE RATIONAL CHARACTER OF MENTAL LIFE.

Another matter which science must be challenged to explain by means of physical laws, is the ordered succession of our thoughts, which is commonly called the association of ideas. Our thoughts and feelings succeed one another in certain regular and rational ways ; and it is obvious that they must do so if our mental life is to deserve the name, and possess any coherence. If our conscious states followed one another without any rational relation between them, they would exhibit as confused and absurd a medley as if not merely the pages of a book were disarranged, but the words on every page occurred at random.

Psychologists have studied the uniformities to be observed among our conscious states, just as the investigators of external nature have traced many of the uniformities which physical facts present ; and in each

case they have remarked certain constants, or regularities of co-existence and succession, which are called *laws*. The laws of matter and of mind alike possess this same character, so far as our knowledge of them goes ; that is to say, they are not revealed to us *à priori*, as rules imposed upon the universe (with the possible exceptions of certain mathematical relations), nor can inherent necessity be shown to belong to them ; they are simply uniformities of co-existence or of succession which we have observed among facts ; and experience has taught us that we can depend on the repetition of them whenever certain antecedents recur. The successions of material facts, expressed in general formulae, are physical laws. The successions of mental facts, expressed in general formulae, are the laws of association. Here, then, we have two series of facts—the same two whose relations have occupied us long, and for our present purpose we may say that they agree in two respects, but differ widely in one. They agree (1) in this, that certain facts of one series are so regularly accompanied by certain facts of the other, that one set comes to be regarded as the obverse of the other, *e.g.*, the feeling of hunger is the subjective aspect of certain nerve-changes, and the sense of repletion of certain others ; particular movements in the highest optic ganglia correspond to particular colours, and each sound has its physical equivalent in the auditory centre. The two series agree further (2), in the fact that, so far as our knowledge goes, the members of each series are alike related to each other only by the link of sequence ; that is to say, material changes and conscious states alike follow one another in regular ways, and beyond that fact of their succession we know nothing, which may be expressed

by saying that we are ignorant *why* the facts of each series succeed each other as they do, and know only *that* they do. In this particular, the relations of the members of the two series are the same *to our apprehension*; but it does not follow that they are so in reality, still less that no tie but time connects the sequents. The tie may be the same in the two series, or it may be different; or, again, it may be that one of the two series is phenomenal merely, and illusory, leaving only one; or, further, that one may be neither of these two, but a *tertium quid* different from both. In these ways it may be that the series which appears double is in reality single—that is to say, through one or both series being only phenomenal—but it cannot be admitted that the two series as presented to us are but one. On the contrary, as phenomena, movements, and feelings are separated, as Mr. Spencer expresses it, ‘by a difference which transcends all differences,’ so that we have more reason for counting them double than any other two phenomena which could be named. Hence their identity, if they be identical, is a fact of Ontology, and does not pertain to the world of phenomena. And it is with the world of phenomena that we are dealing now; that is to say, with movements and feelings as they *appear*, separated by a supreme difference. It is impossible, indeed, as has been shown, to incorporate movements and feelings together, as co-ordinate phenomena, for what we call movements are certain composite mental products, that is, feelings assumed to be movements instead; the two stand-points, therefore, are incompatible. But since it is affirmed, or implied, on the part of natural science, that physical laws and physical causation are really the determining elements in the universe, and drag mental

results after them in entire subjection, it may be shown, in opposition to that unwarranted claim, that if it were admitted, if physical causes and effects were supposed to regulate the order of our ideas, the *rational* character of their groupings and successions would be quite unexplained and inexplicable.

Let it be granted, then, that as in the case of physical causes and effects, we are unable to discover the link which governs their successions, and can only take note of the *fact* that they form certain series; we are in the same predicament in regard to our conscious states. The causal nexus between these we cannot point out; we can observe only the fact of their successions, though we are constrained, in the case of all regular successions, to postulate some closer tie than mere sequence between the phenomena concerned. In the domain of physical causation, the researches of modern science point to the conclusion that all the sequences are, in the last resort, of a mechanical order, — the ultimate atoms as well as the most stupendous masses of matter obeying the laws of mechanics in all their movements; but it is a peculiarity of the groups and successions of our mental states, that they have more or less of an *intellectual* character, and that the orders they observe are *rational*. Instead of physical laws, which express successions determined by weight, mass, momentum, &c., we have laws of association, in which the determining elements are similarities, contrasts, and other strictly mental relations between conscious states.

Let us take for illustration Professor Bain's statement of these laws, with a view to compare mental successions with their parallel series of physical sequences. His first-named associating principle¹ is the Law of Contig-

¹ *The Senses and the Intellect*, p. 318.

uity, under which he includes order in time, order in place, and cause and effect. He gives the following general statement of this mode of mental reproduction :—

‘Actions, sensations, and states of feeling, occurring together or in close succession, tend to grow together, or cohere in such a way that when any one of them is afterwards presented to the mind, the others are apt to be brought up in idea.’

Another leading principle of association among our conscious states is called the Law of Similarity, which Professor Bain expresses thus :—

‘*Present* actions, sensations, thoughts, or emotions tend to revive their *like* among *previous* impressions.’¹

Under this head come classifications and reasonings, and the comparisons of literature and art. There remain the two less original laws of compound and constructive association. The former is stated thus :

‘Past actions, sensations, thoughts, or emotions are recalled more easily, when associated either through contiguity or similarity, with more than one present object or impression.’²

The law of constructive association is as follows :

‘By means of association, the mind has the power to form combinations or aggregates different from any that have been presented to it in the course of experience.’³

This law is illustrated in the novel constructions of sight, hearing, and language, in practical inventions, and works of imagination.


Such are the general laws observed in the groupings

¹ *The Senses and the Intellect*, p. 451.

² *Ibid.*, p. 545.

³ *Ibid.*, p. 571.

and successions of our mental states, and which issue in our intellectual processes, the varied but intelligent play of emotion, and all the complex yet ordered phenomena of our conscious life. But along with these mental changes, which make up the rational life of a human mind, proceed brain changes, consisting of movements mechanically determined, each psychical change having its synchronous physical counterpart. Though the difference between the two series seems to transcend all differences, they are so inseparable, and their parallelism is so complete, as to suggest an essential identity. Now assuming, what of course science provisionally assumes, that physical causation, as we understand it, exclusively determines brain changes according to mechanical laws, it follows, either that their mental concomitants also are physically determined, or that they are ruled independently by a psychological causation which proceeds *pari passu*, and in strict harmony, with the physical series. The last supposition is equivalent to the pre-established harmony of Leibnitz, and implies an essential distinction between the two series which would find no supporters now; so that if we make the scientific assumption respecting the material world, we seem shut up to the other alternative, that all our mental changes are physically determined. Then comes the question:—How is it possible that changes of a purely mechanical order, accompanied by mental equivalents, should give rise to groups and successions among these, expressed by the distinctively mental laws of association, and exhibiting the rational character of the conscious life of man?



§ 11. PROFESSOR WUNDT'S ACCOUNT OF MENTAL ASSOCIATION.

Some suggestive remarks on this subject occur in a paper on "Central Innervation and Consciousness," by Professor Wundt, of Leipsic, which appeared in the periodical *Mind*, for April, 1876. Speaking of the Conservation of Energy, the writer says :—

' If this principle lays claim to a universal validity,
' we cannot withdraw from it those movements which
' we are conscious of only as psychologically caused.
' . . . We must, no doubt, bear in mind that the prin-
' ciple of the Conservation of Energy has to do only
' with motor forces, and that consequently the move-
' ments which proceed from psychological causes are
' subject to this principle only so far as they are *external*.
' The internal or psychological causation of our mental
' states cannot be touched directly by a law which only
' has reference to masses and their reciprocal action.
' Thus it would be futile to seek to apply this law to
' the synthesis of compound perceptions out of simple
' sensations, or to the association of ideas, or to the
' determination of the will, that is to say, to the principal
' instances of psychological causation. At the same
' time, as soon as these internal mental states lead to
' external movements, these latter fall under this prin-
' ciple. Hence arises the important psychological
' postulate, *that the internal causation of our mental*
' *states, and the external causation of our movements,*
' *can never conflict with one another.* Every move-
' ment which has an internal cause (*e.g.*, in conscious
' motives) necessarily has an external cause as well.
' It is certain that Leibnitz had a lively apprecia-
' tion of the necessity of such a connection when

'he put forward his doctrine of a Pre-established
'Harmony. . . .

'The postulate that external and internal causality
'can never conflict in their results leads to two further
'demands of wide scientific consequence as soon as we
'admit that the connection of the physiological and the
'psychological mechanism is only conceivable from the
'point of view of Monism. In the first place, the
'internal causation must be just as stable and invari-
'able as the external; in the second place, we must be
'able to show for every member of the internal causal
'chain a corresponding member of the external causal
'chain. . . . A real solution of the problem is in
'every case attained only when we succeed in exhibit-
'ing both series of phenomena in their mutual penetra-
'tion. In point of fact, the whole of recent psychology
'is pervaded with a disposition to satisfy this postu-
'late. . . .

'In this manner the formation of complex percep-
'tions out of simple sensations presents itself on one
'side as an operation of psychological synthesis, in
'which there is manifested a general property of our
'consciousness, namely, the tendency to fuse simultane-
'ous sensations, and to arrange related sensations
'according to their intensity and strength. The same
'processes, however, are seen to repose on a connec-
'tion between impressions of sense and movements,
'which connection has its basis entirely in the phy-
'siological properties of the organs of sense and of
'their nervous centres. . . .

'As on the one side the processes of association may
'be derived from the nature of our mental states, and
'from the psychological forms of space and time to
'which they are subjected, so on the other side they

'can be regarded as necessarily conditioned by the laws of central innervation. It is a fundamental law of the central functions that an excitation follows a definite path the more easily the more frequently it has already traversed the same, and that different excitations combine so much the more readily the oftener they have been already connected. . . . In this sense we may say : association is nothing more than the internal psychological image of a similar process, which presents itself externally in concomitant movement.'¹

This passage is chiefly suggestive because it exhibits the difficulties of the supposition which pervades 'the whole of recent psychology.' To take the last sentence first : to call association 'the internal psychological image of a similar process, which presents itself externally in concomitant movement,' is opposed to the accurate teaching of Professor Helmholtz, that 'our sensations are, as regards their quality, only *signs* of external objects, and in no sense *images* of any degree of resemblance. An *image* must, in certain respects, be analogous to the original object (*e.g.*, a statue, or a picture). For a *sign* it is sufficient that it become apparent as often as the occurrence to be depicted makes its appearance, the conformity between them being restricted to their presenting themselves simultaneously ; and the correspondence existing between our sensations and the objects producing them 'is precisely of this kind.'² This statement respecting external percepts holds equally good, of course, respecting the nerve-changes to which Professor Wundt refers.

¹ *Mind*, April, 1876, pp. 174-177.

² *Popular Lectures on Scientific Subjects*, p. 393.

Again, we are told that 'the movements which proceed from psychological causes are subject to this principle [the conservation of energy] only so far as they are external,' which must mean so far as they are movements, for all movements belong to the external world. This statement accords ill with the sentence which follows it—'The internal or psychological causation of our mental states cannot be touched directly by a law which only has reference to masses and their reciprocal action.' For the first sentence teaches that certain movements proceed from psychological causes, which implies that there is some interaction between the two series; while the second affirms that psychological causation cannot be touched by a law of motion, which implies that the two series do not re-act on each other. Later on we read, 'Every movement which has an internal cause (*e.g.*, in conscious motives) necessarily has an external cause as well.' Here, also, a mental fact is said to stand in causal relation to a succeeding physical fact, which implies, surely, that the mental series *as such* operates on the physical; for how could a motive be called the cause of a movement, if the movement would have taken place just the same without the motive? Yet every such movement is said to have 'an external cause as well,' by which must be meant an external cause adequate to produce it. If so, the internal cause is superfluous and inoperative, is no cause at all, in regard to physical events, which sound doctrine of the mutual independence of the two series is taught also in the assertions—first, that 'the internal causation must be just as invariable as the external'; and secondly, that 'we must be able to show for every member of the internal causal chain a corresponding member of the external causal chain.'

If these indisputable conditions be adhered to, no doctrine of 'Monism' will justify us in representing a member of one series as a cause of a change in the other; and yet it is impossible to abstain from such language, as the above passage shows, which, affirming the distinctness of the two series, yet describes one as reacting on the other, by calling motives the causes of movements.

In fact, in the passage just quoted, Professor Wundt makes the vain endeavour, which Mr. Shadworth Hodgson makes in a passage of his work on *Time and Space* recently criticized, to account for the indubitable reciprocal action of movements and feelings by affirming at once the 'mutual penetration' and immiscibility of the two series of phenomena. What on one side is a physiological act, is on the other side a psychological change; and the seeming two being actually one, we are supposed to be at liberty to predicate causality of members of either series, even in respect of members of the other. Nerve-changes are affected only by nerve-changes; the successions of thoughts are regulated by mental laws; but these external and internal causations never conflict with each other; and 'from the point of view of Monism,' it is assumed to be permissible to speak of movements which proceed from psychological causes, and, of course, of feelings produced by physical acts. But this permission cannot surely be granted, for, in the first place, the point of view of Monism is an ontological, and not a scientific point of view, and its conclusions are therefore inadmissible in a discussion in which phenomena are assumed to be what they seem. And while immiscibility is predicated of the two series, 'mutual penetration' cannot be affirmed of them too. For the first is a physical,

and the second an ontological predicate; and the two are incompatible, and mutually exclusive. If every movement which has a motive as its cause, necessarily has an external set of causes adequate to produce it as well, the motive *quâ motive* is wholly inoperative, such operation as it may be said to have being exclusively physical, *movement* mechanically caused, and acting mechanically. In fact, the 'mutual penetration' does not belong to the two series, but to the confused ideas which commingle them. If they are identified at all, it is in an Ultimate Reality with which neither physics nor psychology has anything to do. From the scientific point of view which we occupy now, physical causation must be acknowledged as supreme in the brain as elsewhere; and if mental phenomena, which yield no physical evidence of their presence, are nevertheless to receive illicit recognition, they must be regarded as inscrutable and impotent concomitants of purely mechanical changes. And then to the question asked above, 'How is it possible that changes of a purely mechanical order, accompanied by mental equivalents, should give rise to groups and successions among these exhibiting the rational character of the conscious life of man?' The answer must be—No physical explanation can be given of the rational character of the mental sequences which accompany brain changes.

Scientifically considered, the intelligence exhibited by the groups and successions of thoughts and feelings is the result of mere coincidence. There is nothing in the movements which govern them to account for their rationality. Yet this rational character which belongs to the sequences of consciousness is of the very essence of our intelligence, it is the highest distinction of our life. To leave it unaccounted for, to pronounce it a

mere coincidence, is a *reductio ad absurdum* of any theory respecting it. It may be urged, however, that there is a certain relation between the conditions which govern the successions of these two diverse series of facts, which at least helps to account for their correspondence. Let us enquire how far any such explanation can be obtained. If we take the two principal laws of mental association, the Laws of Contiguity and Similarity, some reasons derived from the physical laws, which their concomitant brain-changes observe, may be found why conscious states should succeed one another in those orders. The Law of Contiguity is, 'actions, sensations, and states of feeling, occurring together or in close succession, tend to grow together, or cohere in such a way that when any one of them is afterwards presented to the mind, the others are apt to be brought up in idea.'

On the mental side, then, is the observed fact that conscious states which have once been closely related in time, tend to recur together. Of course their concomitant nerve-changes have a similar tendency to recur. Do we know of any physical reason why they should? Nerve-changes which have occurred together or in close succession have spread simultaneously or successively over the regions of the brain concerned. And—to quote the words of Professor Wundt—'it is a fundamental law of the central functions that an excitation follows a definite path the more easily the more frequently it has already traversed the same, and that different excitations combine so much the more readily the oftener they have already been connected.'¹

There are uniformities of nervous action, and, like

¹ "Central Innervation and Consciousness," *Mind*, April, 1876, p. 177.

all other physical effects, they are resultants of the materials and forces collocated there and then. When we turn, then, to the material counterparts of the mental sequences which observe the mental Law of Contiguity, we find that these material counterparts, in observing the same order, do so in strict accordance with laws based on physical causation.


The other great principle of mental association, the Law of Similarity, is, as we have seen, expressed thus by Professor Bain:—

‘*Present actions, sensations, thoughts, or emotions tend to revive their like among previous impressions.*’

Let us ask again,—Do we know of any physical reason why the nerve-changes which correspond to these successions of mental states should follow one another in the same order? It is not unfair to assume that the material concomitants of *like* sensations, thoughts, and emotions, are themselves *like*, and occupy or traverse, neighbouring regions of the brain, similar and adjacent nerve-tracks. If so, the excitation of one would have a physical tendency to excite the rest. For the flow of nervous energy in one place would be likely to extend to the surrounding region; and when the junctions between neighbouring nerves had once been established, they would be more easily traversed each time they were used.

But the correspondence between the two series cannot be explained by such considerations. For they assume that the laws of mental association govern the successions of conscious states independently of the concurrent nerve-changes; and, then, the harmony between the two is explained by the fact that the laws which govern nerve-movements, and the laws which govern feelings, alike make those nerve-movements and

feelings recur which are similar, or have been contiguous. But this supposes that the two series stand related as in the Leibnitzian Harmony—that they are parallel but separate—a supposition which nobody accepts. Clearly one must be regarded as the governing series, and scientific enquirers will not hesitate to affirm that it is the physical series which determines the mental one. In the first place, the movements supposed to have mental concomitants are exceedingly few compared with the rest, and are perfectly regular members of an interminable aggregate of series which have them not. Consciousness is to us a very exceptional fact in the boundless material world, and we are correctly taught by scientific authorities that it is powerless to alter the course of physical sequences. In fact, as we have seen, physical science possesses no evidence at all of consciousness, and ought to ignore it altogether; as it is, mental states receive illicit recognition by science, but are regarded as impotent concomitants of nerve-changes. It follows that the uniformities which they observe, and which we designate Laws of Mental Association, are wholly derived from, and simply reproduce, the physical series, in mental equivalents; and any features, such as rationality, which the resulting mental sequences and compounds exhibit, must therefore be entirely casual, must be mere coincidences. Although, then, the Laws of Association express the orders of succession among mental states, and these conform perfectly to the successions of nerve-changes, yet, since the mental series is wholly subordinate to the physical, and the physical series is non-rational, the rational character of its conscious accompaniments is a mere coincidence incapable of physical explanation.



It may be suggested that neither series controls the other, because both may be determined by an occult reality, which presents to us the two sets of appearances; but this view introduces ontological considerations beyond the province of science, which can but proclaim the supremacy of physical law; and if such an ontological supposition be admitted, it implies the merely phenomenal character of the material world, that it is not what it seems.

It may seem that the rationality ascribed to mental states is resolvable simply into the recurrence of states that are similar, or were formerly contiguous, and that by their recurrence in this order they do but image the tendencies to recur which belong to their physical equivalents. But if the character of rationality consisted merely of certain orders of succession, it would belong equally to the parallel nerve-movements, whereas it is peculiar to the mental series. Obviously, mental phenomena have characters which differentiate them wholly from their material equivalents, and which physical science is incompetent to account for, or even to apprehend. *Given these distinctive characters*, and it may be that, if the mental states which possess them follow one another in the orders which their material equivalents observe, those orders will be what we call rational. But to suppose those characters given, is to beg the matter in dispute—to postulate the qualities respecting which it is urged that they and their relations could never arise out of physical facts as we know them.

§ 12. SCIENCE CANNOT ACCOUNT FOR MAN'S MORAL LIFE.

It is obvious that the same reasoning holds in regard to the facts and distinctions of morality. These, like

all other facts of mind, have physical counterparts, consisting of movements. The movements, of course, possess no moral characters at all. Such characters can be ascribed only to the series of their mental equivalents. Yet that series is wholly determined by the movements which correspond to its members, each to each. And that governing series of movements obeys purely mechanical laws, and possesses no features to account for the moral characters which certain of its mental equivalents exhibit. From the physical point of view, then, the moral nature of man is the merely casual resultant of certain mechanically-ruled movements, wholly indifferent morally. Here, again, the objection just urged may receive the reply just given to it. If we grant to certain portions of the mental series the moral characters they possess, then, no doubt, we may say that those moral characters arise when the mental series follows the order of the physical series. But to grant this is to surrender the difficulty which needs to be explained, which is,—How comes it, that when a complex series of feelings follows the order of a mechanically-ruled series of movements, those resulting groups of feelings exhibit the high characters of man's moral life, of which the governing movements are wholly destitute? For it is in the feelings *as grouped*, be it observed, that their moral characters appear. A unit of feeling, out of relation to any others, could hardly have a moral character. Rationality, also, arises from the relations of grouped mental states, and does not belong to single thoughts.

What holds good of the moral is equally true of the spiritual life—all the thoughts and emotions concerned in Divine worship; they and their rare and exalted combinations (whether based on facts or fictions) all



follow as the chance results of the mechanical laws which regulate the collisions of nerve-waves. The physical series dominates them ; they never affect it in the smallest degree ; nor do they take place independently of it. Thus, the entire intellectual, moral, and spiritual life of man, the great and noble distinction of his being, is reduced by science to a set of mere coincidences, casual products of the mechanically-ruled nerve-changes, whose obverse aspects present these exalted characters. So it is, at least if material phenomena represent realities ; but by this conclusion physical science seems to protest against such a supposition, and to proclaim the merely phenomenal character of its facts and laws.

The inability of science to account for these and other features of mental life might be deduced still more briefly from the conclusion already reached, that it is incompetent to recognize a single fact of consciousness, which gives no physical trace whatever of its presence. For if consciousness cannot be apprehended at all by the science which deals with material phenomena *à fortiori*, particular forms and features of it cannot be physically apprehended.

§ 13. OUR KNOWLEDGE OF THE PAST INEXPLICABLE TO REALISM.

There are characters of mind still more fundamental, which, if mind be regulated by physical laws, demand a physical explanation, and fail to receive any. Such is the remarkable hold of the past which memory affords, and which is clearly indispensable to our mental life. Conscious states occur in series, as their corresponding nerve-changes do ; that is to say, one

passes away, and gives place to another ; but if one passes away before the next arises, how can we know that there is a series ? It could not be apprehended as a connected whole, but we should be conscious exclusively of the now present feeling, and those past would be to us as if they had never been. There might be association of ideas, but we could not be aware of it.

Consider, first, the case of a single series of feelings, corresponding with a single series of nerve-waves ; it is obvious that an antecedent feeling will, from the very fact that it *antecedes*, have passed away and be non-existent when its *consequent* occurs. In other words, no two members of the same series of successive feelings can possibly co-exist in consciousness. If A and B are *antecedent and consequent*, it is a contradiction to affirm that A and B are *coexistent*. A exists no longer when B emerges ; then how can we be conscious of both B and A ? And yet, as Mr. Spencer says, 'It is admitted on all hands that without change, consciousness is impossible : consciousness ceases when the changes in consciousness cease.'¹ He writes also :²

'Sequence is change ; and change as known by us, 'is the unlikeness of a present state of consciousness to 'a past state. . . . The fundamental or undecomposable relation must have two terms—two juxtaposed states of consciousness. These must be unlike, 'otherwise they will constitute not two states but one. 'To be known as unlike they must be known in succession, since consciousness cannot be in two states at 'the same time.'

¹ *Principles of Psychology*, II., § 377.

² *Ibid.*, § 374.

But if consciousness cannot arise without change, which, as known by us, is the unlikeness of a present state to a past state, and cannot be in two states at the same time, it cannot arise without our being conscious of a past feeling as well as of a present one ; but a past feeling is, *ex hypothesi*, gone ; and as a feeling exists only while it is felt, it is absurd to say we can be conscious of one which, being past, is felt no longer. It follows from this that consciousness is impossible. Mr. Spencer does not seem expressly to recognize this difficulty—the necessity that *successive* conscious states should be brought into a unity of perception in order that they may be compared, and the impossibility of effecting this, since the earlier in the series exists no longer when the later arises.

The nearest approach to a treatment of the difficulty occurs in the following passage.

‘ In proportion as the specially-combined states ‘ D-B-A-C have been repeated, the time occupied in ‘ the transition from the first to the last becomes abbreviated ; and ultimately this series of states and changes ‘ takes no more time than one of its constituents originally did. The consequence is, that these compound ‘ changes tend to become more and more clearly thinkable as single phenomena in consciousness. . . .

‘ But now observe the important fact that in proportion ‘ as a chain of such changes is consolidated into a single ‘ change, in the same proportion do the several sensations which form the antecedents and consequents of ‘ the changes become present together. When the ‘ compound change D-B-A-C takes place, as it ultimately does, almost instantaneously, it results that ‘ before the first sensation or idea, D, has ceased, the ‘ others, B-A-C, have severally arisen. Hence there is

‘produced a consolidated consciousness in which many ‘sensations appear to be simultaneously presented.’¹

But since, according to Mr. Spencer’s theory, each unit of feeling is strictly concomitant with its unit of motion, whenever a wave of nerve-change passed more rapidly, so, *pari passu*, would the corresponding wave of feeling, an earlier one escaping faster as its successor followed faster, so that, however rapidly they passed, they would remain distinct. If, however, a consequent wave overtook its antecedent, and a composite wave of movement accompanied by one equally composite of feeling was the result, that compound would be, in consciousness, a strictly *present* feeling, and, because compound, different from either of its constituents. At any rate, only so much of the earlier and later feelings as were *strictly synchronous* could coexist in consciousness, and, consequently, they could not possibly be apprehended as successive. To be apprehended as successive, one must be apprehended as existing now, and the other as existing formerly but not now; but it is absurd to speak of being conscious of a feeling which has ceased to be. The consolidated consciousness of which Mr. Spencer speaks, is confessedly made up of *successive* elements. ‘The time occupied in the transition from the first to the last becomes *abbreviated*,’ he says. ‘The compound change takes place *almost instantaneously*.’ But however brief the period be, since the members of the compound stand in succession, the earlier will have ceased to be before the later arise. It may be urged that Mr. Spencer says, ‘before the first sensation or idea has ceased, the others have severally arisen.’ So far as that is the case, there is, of course, a present consciousness of more than one. But to that

¹ *Principles of Psychology*, II., § 378.

same degree the feelings in question are synchronous, and not successive; and it is as synchronous that consciousness apprehends them. The desideratum is to account for the consciousness of *successive* feelings; but directly they are supposed to stand in succession, it is plain that the earlier must be past and out of consciousness before the later emerges there, and no rapidity of transition can make it otherwise, still less can the multiplication of *simultaneous* feelings accomplish the result. 'Ultimately,' says Mr. Spencer, 'this series of states and changes takes no more time than one of its constituents originally did.' If so, the period occupied at first by one of the constituents was long enough to include all these minor portions of time, and each earlier portion was over and past before each later one occurred; in other words, the period in question included sundry portions of the past as well as the present. Of this there seems a hint in Mr. Spencer's statement, that in the consolidated consciousness 'many sensations appear to be simultaneously presented.' This expression shirks the difficulty; for how could feelings appear to be present when they were really past?

Mr. Spencer's theory of the mind rests on the possibility of the recognition by consciousness of successive changes, but he fails to show how even two could be recognized together there; how a single past feeling could be brought into unity of perception with a present feeling, enabling them to be compared. It is inevitable that he should fail, for the problem is to represent two feelings as both successive and coexistent in consciousness. That would require us to be conscious of some portion of the past as well as of the present. An absurd supposition, for the immediate past is as completely gone as distant ages are.

It may be urged that the antecedent feeling, though it has ceased to exist, may be represented in consciousness by a similar one which suggests it, in company with its consequent. But since, as Mr. Spencer tells us, 'consciousness cannot be in two states at the same time,' there could not coexist with the consequent feeling another suggestive of its antecedent. Besides, if that were possible, we should have two synchronous present feelings, and why should one of them represent a past feeling? What is ever to suggest to us the notion of the past, since every feeling we can ever have is a present one? 'To be known as unlike,' says Mr. Spencer, 'conscious states must be known in succession,' which is just what it seems impossible they ever should be. Further, what is the distinction between a feeling recognized as present, and a feeling which, though of necessity equally present, is associated by us with the past? The one reveals to us the real moment now existing, the other suggests to us a time existing no longer. The one shows us what is actual, the other paints a picture. But since the latter, like the former, occurs in the present, why should we associate it with non-existent time in which it did not occur, rather than with the present time in which it does occur? And this when we never can at any time have been conscious of any feeling except a present one. We must at least say that, while we are directly conscious of the present moment, past feelings can be set before us only in present mental pictures, which we can never prove to be more than imaginary. Moreover, suppose that a perfect resemblance existed between a present and a former feeling, there is nothing in that circumstance to make the present feeling *recal* the former one. A certain brick, or a certain leaf, may

very closely resemble other leaves or bricks, but it does not therefore represent those other leaves and bricks, and bring them to our knowledge. Why then should a feeling represent, and bring back to our knowledge, a former feeling because it resembles the earlier one?

Granting that a wave of motion, precisely similar to a previous wave, moves along a nerve-channel precisely similar to the one along which a previous wave moved (and this could not happen in an organized structure), and granting that the two waves have equivalents of feeling precisely similar, yet what is there here that amounts to, or distantly approaches, an act of *memory*? Here are two successive feelings, precisely similar, but why should the second recal the first? Nay, if it recal the first, it does not perfectly resemble the first, for *that* did not recal a first. The second, then, must be different from the first, in order to bring it to mind, and at the same time must resemble it, because it is only in virtue of the resemblance that the first is recalled! Physically, there must be a wave along the same nerve-channel, for that seems to be of the essence of the physical aspect of an act of memory. And yet there must be either additional waves, or a different wave, and in the additions, or the difference, must be that which constitutes the act or acts a recollection, because the first was not a recollection, and the second is. And if the sense both of similarity and of difference are essential, they cannot coexist in consciousness, but must be successive, and imply time, and further acts of memory, comparison, and judgment, to bring them into relation.

In the same way, every act of comparison and judgment, every case in which successive thoughts are brought into relation, raises the same difficulties.

It may be said that this happens in virtue of the Law of Association that present sensations, &c., tend to revive their like among previous impressions. But this law simply states the fact that there is a tendency for feelings like former ones to occur in succession. It says nothing as to why, if that be so, the later feelings should suggest to us the earlier ones. The law might be fulfilled if present feelings never suggested to us the past feelings they resembled. Feeling B may be an exact copy of feeling A, but that is no reason why it should represent to us—strictly speaking it cannot *recol*—feeling A, which may be a remote antecedent. No mere series of feelings, however ordered and regular, could, it is plain, give us any apprehension of the past. Besides, we must remember that there is no such thing as a series of existing feelings. Only the present feeling exists, all antecedent ones have ceased to be. And therefore the very fact that they occur in series is an assumption, based on the trustworthiness of that knowledge of the past, which, reasoning from phenomena, it seems impossible for us to obtain.

This difficulty respecting memory applies to all the grouping of thoughts into a unity of conception which is indispensable to thinking. All integration of ideas, all comparison of them, would be impossible, unless many could be apprehended in one complex whole.

§ 14. PERSONAL IDENTITY UNEXPLAINED BY REALISM.

The same difficulty is closely involved with the invincible problem of Personal Identity—the continued existence of the Ego amid the fugitive states of consciousness. Our mental life seems made up of a series of conscious states; they are the only

phenomena of mind ; but it seems impossible that a series of feelings should give us the conviction, indispensable to intelligent existence, that I who feel now am the same being who felt yesterday and last year. It is not that the conscious Ego is merely a complex present feeling representing an aggregate of past feelings. We cannot help regarding the Ego as something enduring, and distinct from the fleeting series of our conscious states, something which perceives them and judges them ; and yet mental phenomena present to us only a stream of feelings, of which the Ego, when we make it a subject of thought, appears one. Mr. Mill states this difficulty with great force, and with all candour confesses that his philosophy fails to account for it. He says :—

‘ Besides present feeling, and possibilities of present feeling, there is another class of phenomena to be included in an enumeration of the elements making up our conception of mind. The thread of consciousness which composes the mind’s phenomenal life, consists not only of present sensations, but likewise, in part, of memories and expectations. Now, what are these ? In themselves they are present feelings, states of present consciousness, and in that respect not distinguished from sensations. They all, moreover, resemble some given sensations or feelings of which we have previously had experience. But they are attended with the peculiarity, that each of them involves a belief in more than its own present existence. A sensation involves only this, but a remembrance of sensation, even if not referred to any particular date, involves the suggestion and belief that a sensation, of which it is a copy or representation,

'actually existed in the past: and an expectation
 'involves the belief, more or less positive, that a
 'sensation or other feeling to which it directly refers,
 'will exist in the future. Nor can the phenomena
 'involved in these two states of consciousness be
 'adequately expressed, without saying that the belief
 'they include is, that I myself formerly had, or that I
 'myself, and no other, shall hereafter have, the sensa-
 'tions remembered or expected. The fact believed is,
 'that the sensations did actually form, or will hereafter
 'form, part of the selfsame series of states, or thread of
 'consciousness, of which the remembrance or expecta-
 'tion of those sensations is the part now present. If,
 'therefore, we speak of the mind as a series of feelings,
 'we are obliged to complete the statement by calling it
 'a series of feelings which is aware of itself as past and
 'future; and we are reduced to the alternative of
 'believing that the mind, or Ego, is something different
 'from any series of feelings, or possibilities of them, or
 'of accepting the paradox, that something which *ex*
 '*hypothesi* is but a series of feelings, can be aware of
 'itself as a series.

'The truth is, that we are here face to face with that
 'final inexplicability at which, as Sir W. Hamilton
 'observes, we inevitably arrive when we reach ultimate
 'facts; and in general, one mode of stating it only
 'appears more incomprehensible than another, because
 'the whole of human language is accommodated to the
 'one, and is so incongruous with the other that it
 'cannot be expressed in any terms which do not deny
 'its truth. The real stumbling-block is perhaps not in
 'any theory of the fact, but in the fact itself. The true
 'incomprehensibility perhaps is, that something which
 'has ceased, or is not yet in existence, can still be, in a

'manner, present; that a series of feelings, the infinitely greater part of which is past or future, can be gathered up, as it were, into a single present conception, accompanied by a belief of reality. I think by far the wisest thing we can do is to accept the inexplicable fact, without any theory of how it takes place; and when we are obliged to speak of it in terms which assume a theory, to use them with a reservation as to their meaning.'¹

Mr. Mill frankly admits in this passage, that to regard the mind merely as a series of feelings is to leave some of its most remarkable facts unaccounted for. We can give no explanation, he acknowledges, of memory, or the enduring Ego, if we confine ourselves, as he does, to the *phenomena* of mind. That is exactly the conclusion urged in these pages in regard to this and to other matters discussed in them. To take phenomena as being what they seem, and as furnishing accurate and adequate materials for a theory of the world, is, as we have seen again and again, to be landed in impossible conclusions. The inference to be drawn is the same in this case as in others; the phenomena cannot be as they seem. It will not do, as Mr. Mill proposes, to leave this unreduced fortress in his rear and pass on. A theory of the mind which is incompatible with some of its most important characters is proved to be wanting, and self-condemned. Mr. Mill urges that the facts are unaccountable on any theory. That is true; they baffle all explanation. But they are in direct contradiction to the view that mind is a mere stream of feelings, while they favour any view which teaches that Memory and Personality imply much more than a stream of feelings, though those

¹ *Exam. of Hamilton's Philosophy*, pp. 212-13.

who hold it cannot say exactly what is implied. Theories which attempt to explain them may be inadequate, but a theory which leaves no room for them refutes itself.

It is maintained, then, that our knowledge of the past in memory, and our consciousness of continued and personal existence, which depends on memory, cannot be accounted for, could not arise, on the supposition that mind is a mere series of feelings accompanying a series of nerve-changes. Proceed on that supposition, and the most essential characters of mind would be wanting.

§ 15. THE CONCEPTION OF TIME INCONSISTENT WITH THE REALISTIC HYPOTHESIS.

But we may go further, and say that when Mr. Mill, adopting the arguments of Idealism, reduces the material world to what he calls Permanent Possibilities of Sensation, and represents the stream of feelings which seems to constitute our mental life as all which we can know of mind, he proceeds on an assumption which cannot be verified, which cannot be worked, any more than that of the reality of external objects which he rejects. He seems to hold that to regard mind as a stream of feelings is to confine ourselves to the phenomena actually presented. But this implies that there has been a succession of past feelings as well as that there is a present feeling. While, as we have seen, we are conscious only of the present, and it is impossible to see how the idea of past feelings could arise in the present, besides the further impossibility of proving that present feelings represented past feelings truly if they did arise. In a word, to suppose


that we have had feelings in the past is to transcend consciousness as much as to suppose that we perceive external objects. Mr. Mill should have gone further, if he went so far. My present feeling is all of which I am conscious. All else is but assumption. Further, if we look closely into the meaning of the *present*, within the limits of which consciousness must reside, we shall fail to find standing room for any feeling in it. In ordinary language the present stands for an appreciable period of time, without exact limits; but when we come to distinguish it accurately from the past and the future, it resolves itself into something quite inappreciable, to which we cannot ascribe existence at all. If, for example, we limit the term present to the passing moment, it is plain that the earlier half-second is over before the later has begun; in other words, the half which has elapsed belongs to the past, and the remaining half to the future, while the present is merely the transition from the one to the other. If we assign to that act of transition a period of time, however brief, it must lie between limits, and be capable of division; and again we may say, when the first half has passed, the second half will be future. Hence the actual present can occupy no period of time at all, but is merely the limit which divides the past from the future. It is like the division between two conterminous spaces of different colours, which observes Euclid's definition of a line by having no breadth. Hence the present, as we know it in consciousness, seems as if it must cover some portion of the past, without which even a single feeling could hardly be apprehended, for the minimum of sensation must be of appreciable duration. Yet it is impossible to grant such a minimum, since the immediate past is as entirely

gone as the remotest ages, and a feeling which has passed, however recently, has absolutely ceased to be. Since, nevertheless, consciousness does apprehend many sensations at once, in a unity of perception, it can only be that, as Mr. Spencer says, they '*appear* to be simultaneously presented,' although not really so. It follows that our apprehension of the time-relations existing between our feelings is only phenomenal, and not real. We seem to see together in consciousness, successive feelings, the earlier of which must have ceased to be. But since we cannot be conscious of a feeling which has ceased to be, the past feeling must be *pictured* as past in a present consciousness. And as the actual present cannot occupy the time required to apprehend even a single feeling, far less two, and two are essential to consciousness, it results generally that our apprehension of time is phenomenal, and not real—according to Kant's view, merely a form of our thought. Memory and Time, therefore, afford further evidence against the theory of Realism; they, too, cannot be what they seem. Treat them as being such, and knowledge of the past is impossible, and the present is too fugitive to be known. Consciousness itself would be impossible in Time, as Time is conceived by us to be.

It seems inaccurate, then, to speak of the present as any portion of time at all. It is merely the boundary between the past and the future. But that conclusion lands us in further difficulties. For the past is gone, and the future has not arrived. All that we do is done in the present. All that takes place in the world takes place in the present. It is only in the present that we live. If then, the present is no portion of time at all distinct from the past and the future, it is

too brief for us to do anything in it, too brief for us to exist in it, too brief for anything to happen in. The merest unit of feeling requires for its apprehension a portion of time which is appreciable, else the feeling would be inappreciable. But the actual present is not such a portion, if, as appears, it is not a portion at all. Hence it would seem that a feeling, in order to be apprehended, cannot be confined to the actual present, but must embrace also some fraction of the past, must consist of something which has existed, as well as of something which does exist. But if the smallest fraction of the past can be apprehended in consciousness, the past is not gone as we suppose. According to our conceptions of time, of course a former feeling, however recent, is as completely gone as the most distant past. Moreover, if the present occupies no portion of time at all, such a view not only renders our existence in it impossible, but makes time impossible too. For if each present has consisted of no period of time at all, the addition together of any number of such nothings, would make nothing, and there could have been no past any more than a present. On the other hand, we have seen that to attribute to the present any portion of time, however brief, allows us to divide it, and then we must admit that the earlier half belongs to the past, and the remaining half to the future.

Let us take the case of a stick burning at one end, which, if turned round quickly, gives the appearance of a wheel of flame. The explanation given is, that the lighted end of the stick makes a revolution before the impression its light made on the eye at any point has passed away, so that the sensation is renewed before it is effaced. Here we have evidence that the sensation at any point in the circle lasts all the time the stick



is revolving, until it comes round to the same point again. So that the renewed sensation merges into one with the previous sensation. It is for the same reason that if similar beats of sound succeed one another more rapidly than sixteen in a second, they cease to be heard separately, and become merged in a continuous tone ; and Mr. Spencer points out¹ that the wave-character of nervous action renders it not improbable that all our sensations are composed, like musical sound, of successive mental shocks recurring so rapidly as to be merged into continuous feelings.

Since, then, a feeling, or a change of feeling, cannot be apprehended unless it lasts for a certain period of time, and the strict present is no period at all, consciousness would be impossible if it were limited to the actual present. And if we could be conscious of the actual present, yet if we were conscious of that only, we could still have no notion of time as continuous, for that implies the knowledge that we have had other feelings in the past, which consciousness of the present feeling alone could never give. Hence our knowledge of former feelings, and even our apprehension of a present conscious state, seem to require a knowledge of time more extended than the present, strictly so-called.

As, therefore, in point of fact, we do apprehend present feelings, and know besides that we have had a long series of feelings past, it follows that consciousness cannot be limited to the strict present. But how can it extend further? since, as we have seen, the most recent past seems completely gone, and all its feelings absolutely non-existent. The only possible conclusion seems to be, that time cannot be as it appears to us. For if it were, we could know nothing outside the

¹ *Principles of Psychology*, part II., chap. 1.

present, and even that would be too fugitive to be known. But if the conception we form of time is more or less an erroneous conception, distorted by the standpoint from which we view it, it may be that knowledge is possible to us which would not be possible if our present conception of time were accurate.

Hence our notion of Time, like many more of our notions, gives evidence of its merely phenomenal character; it holds good as a form of our present experience, but lands us in contradictions if treated as a real condition of existence.¹

§ 16. SPACE AND MOTION AFFORD EVIDENCE AGAINST REALISM.

We may say of Space, as well as of Time, that it refutes the theory of Realism, because, if it were what it seems to be, and what Realism assumes it to be, we could not perceive it. This has been shown already in the examination of Professor Helmholtz' statement that relations of space, as well as some others, are common to the outer and the inner world. It was pointed out (pp. 160-1) that our conception of any distance like an inch is not an inch long, has not any length at all;

¹ If time is a subjective fact, and built out of our experience, and that experience is made up of successive acts, waves or shocks of feeling, is that not why time seems to us to be made up of successive instants, and only the passing instant can be apprehended? Or we may approach the matter from the other direction, and say, given our notion of time, and it seems inevitable that feeling should be made up of successive minima. For though we speak of feeling as more or less continuous, and seem unable to apprehend it unless it lasts longer than the strict present, yet we cannot, in accordance with our notion of time, regard a feeling as lasting longer than the inappreciable moment of transition which constitutes the actual present; for the previous moment having elapsed, the feeling which occurred in it exists no longer. Hence a so-called continuous feeling must consist of a series of separate feelings, divided by inappreciable intervals.

nor is the thought of a triangle of the shape of a triangle. Our thoughts, which are supposed to have no extension, cannot possibly *resemble* anything which has extension. And even if they did, we should perceive the resemblance within, and not its counter-part without. For if we take only a point in space, we cannot say we are directly conscious, even of that, for all the points which we see appear outside us, whereas consciousness is within the brain, and gives us direct knowledge, as Hamilton, the great champion of Realism teaches, 'solely of what is now and here present to the mind.' We cannot, then, be actually conscious of points of space outside us, and we are not conscious of the point in the brain where consciousness resides; but what we seem to see outside is a mental picture in the brain, which we do not assign to its actual locality there, but regard as external to ourselves. Space spreading outside us, which Realism assumes to exist, we could not, therefore, perceive, if it were there, but only a representation of it. And that granted, no evidence remains of the existence of a Space which we cannot perceive.

It seems undeniable, then, that the space we perceive is not the same space which we assume spreads around us, just as we have seen that time, as it appears in our consciousness, cannot be the time in which we assume that everything happens. Our conception of space is a picture in the brain which may or may not suggest the reality truly. Our conception of time, whether or not it represents the reality correctly, is apprehended by us later than the reality, and sets before us in succession the occurrences of different moments, which we could not know if we perceived time itself, because then we could not be aware of anything beyond the

actual present, and that is too fugitive to be recognized in feeling.

From these considerations respecting Space and Time, a conclusion follows which was maintained, by somewhat similar arguments, very early in the history of philosophy, namely, that motion is impossible. For space can be divided into parts, and without raising the question of its infinite divisibility, it is plain that no portion of space large enough to allow of movement within it could be a true minimum, because it would contain both the portion moved out of and the portion moved into—two minima, which, at the least, would be required to allow of any movement. But it would take a minimum of time to traverse a minimum of space, and it would take more than a minimum of time to traverse even two minima of space. And the present is a strict minimum of time, and all which has happened outside it belongs to the past, and has ceased to be. Therefore, inasmuch as motion requires more than a minimum of time, as of space, it could not exist in the present alone; and, as it does not exist in the past, it cannot exist at all.

In other words, nothing can move without traversing space and occupying time. The smallest movement requires a certain portion of space and of time. When any space is traversed, there is the place moved from, and the place moved to. And the last cannot be entered till *after* the first has been left. Therefore *the past plus the present* is necessary to movement. The very smallest movement must include what has existed as well as what does exist, what was as well as what is; and what was being no longer existent, nothing which requires it can exist, but can only be pictured in a present thought. Of course it follows, on the other

hand, from the above conceptions of minima of space and of time, that no number of absolute indivisible minima of space or of time, if added together, could make up any appreciable portion of either.

These difficulties in regard to motion arise out of our conceptions of time and space, and belong to the realistic theory only in virtue of its assuming that time and space are what they seem. Else, motion, as given in a succession of changing appearances, is a great characteristic fact of the material world; all its phenomena are reducible into movements of matter.

At the same time, there can be no apprehension of movement apart from the apprehension of a *succession* of percepts; and, as we saw lately in regard to the series of our conscious states, of which only the present one can exist at one time, we transcend direct consciousness, and assume what we cannot prove, when we say that we have had a *series* of states. So also, to say that we have had a series of percepts, which we must have had to perceive a movement, is to transcend consciousness, which is a 'knowledge of what is now and here present to the mind,' and to assume what we cannot prove, the trustworthiness of memory. For though we speak of a movement as if it were a single fact, it is really an aggregate, made up of successive minima, each occupying a different portion of space and of time; and the unity we ascribe to it as one movement exists only in the mind which perceives it. Here, then, is additional evidence that when we follow out Realism to its issues, it lands us in impossible conclusions. Assume the material world to be conditioned by time and space as it seems, and motion, which requires more than a minimum of time,

could not exist, because the present, in which alone it could exist, is strictly a minimum of time.

§ 17. THE CONCEPTION OF ENERGY INCOMPATIBLE WITH
THE THEORY OF REALISM.

We seem placed in similar difficulties in regard to energy, if we confine ourselves to physical phenomena assumed to be what they seem. For all external phenomena are reducible to matter and motion, and the successions of movements are, it is acknowledged, as known to us, only antecedents and consequents; no more is meant by the words, physical causes and effects. The phenomena present to us only this series of changes. But we cannot help going further, and supposing each movement to be produced by an adequate force, not presented as a phenomenon, but of which all phenomena are *effects*. We speak, *e.g.*, of the vital force, or the principle of growth, in a plant; but analysis shows nothing there except the movements of the particles composing it; and those are the only phenomena which the animal body presents. We speak of the force of gravitation, and are said to measure it; but nothing is presented to us except the movements of particles in certain uniform ways, and the uniformities constitute the law. When we are said to measure the force, and anticipate its action, our measurement is expressed in terms of the motion it is supposed to be capable of producing, and is reliable only in so far as our presumption is reliable that the movement will continue to be uniform. We speak of the electric force whose path is marked by flame and ruin, but the phenomena consist only of those effects, luminous and destructive, which are all

reducible to movements. Of the force as distinct from the effects it produces no trace presents itself to us. It is the same with all forms of force ; we know it only by its manifestations, the phenomena of movement. Natural philosophers, indeed, speak of force as distinguished from its effects, but they define it in terms of motion. '*Impressed force*, or *force* simply, is 'any cause which tends to alter a body's natural state 'of rest, or of uniform motion in a straight line. 'The '*measure of a force* is the quantity of motion which it 'produces in a unit of time.'¹

Professor Tait, however, from whose work these definitions are extracted, is far from resting satisfied with a conception of energy limited to the movements presented by phenomena. He distinctly contends for energy as a positive 'objective reality,' apart from the movements it produces. In a lecture on "Force," delivered to the British Association at Bradford, in 1876, he is reported² to have said, 'Mark, however, 'that heat is not the mere motions, but the energy of 'these motions ; a very different thing, for heat and 'kinetic energy in general are no more "modes of 'motion" than potential energy of every kind (including that of unfired gunpowder) is a mode of rest.'

It is obvious that there is great difficulty in conceiving of potential energy, if we confine ourselves to the phenomena of movement. For if active energy consists simply and solely of motion, latent energy is simply and solely motion suspended, which is nothing at all. Now, when a certain amount of energy becomes latent, precisely that amount may be called into action again, after a shorter or longer interval ; which could

¹ Thomson and Tait's *Natural Philosophy*, Part I. pp. 54-5.

² *Nature*, September 21, 1876.

not be if latent energy were the mere negation of movement. In that case indestructibility could not be predicated of it. And if potential energy is not simply motion suspended, active energy is not simply motion. We seem compelled to regard the correlated movements of the material universe as the effects of a common something called energy, however obscure our conception of its nature must be.

On the other hand, it is indubitable that energy, as distinguished from motion, is not a *phenomenon* at all. The phenomena which suggest it are these. We are conscious of movements among material objects, and these movements occur in uniform ways (observe regular laws, as we say) which enables us to anticipate some of them. And the quantities of movements which are observed to take place, and the intervals of rest between movements, are such as they would be if there was a something called energy, capable of becoming, now active, now latent, but incapable of diminution or increase. But though that be so, the existence of this something apart from its effects in movements is a contribution to the phenomena made by our minds; it is an assumption, an hypothesis, framed to account for the phenomena, and not anything presented among the phenomena. The phenomena consist simply of the series of movements; we interpret them, rightly or wrongly, by the supposition of indestructible energy which effects them.

Professor Tait, in the lecture on "Force" just quoted, maintains an opposite opinion, and affirms that we are bound to ascribe objective reality to energy as much as to matter. His argument is as follows:—
'Our conviction of the objective reality of matter is
'based mainly upon the fact, discovered solely by ex-

'periment, that we cannot in the slightest degree
'alter its quantity. We cannot destroy, nor can we
'produce, even the smallest portion of matter. But
'reason requires us to be consistent in our logic; and
'thus, if we find anything else in the physical world
'whose quantity we cannot alter, we are bound to
'admit it to have objective reality as truly as matter
'has, however strongly our senses may predispose us
'against the conception. Heat, therefore, as well as
'light, sound, electricity, &c., though not forms of mat-
'ter, must be looked upon as being as real as matter,
'simply because they have been found to be forms of
'energy, which, in all its constant mutations, satisfies
'the test which we adopt as conclusive of the reality of
'matter.'

In the first place, it is surprising to be told that
'our conviction of the objective reality of matter is
'based mainly upon the fact that we cannot alter its
'quantity;' since, however clearly recognized by philo-
sophers, the fact is not distinctly apprehended even
now by the majority of mankind, who yet are perfectly
assured of the objective reality of matter.¹ The disap-
pearance of substances consumed by fire, and of water
when it evaporates, and of mist and cloud when they
are absorbed, probably suggest to many that in these
cases matter is destroyed. At any rate, the opposite
conviction, as distinctly held, is an inference of science
known to few; which Professor Tait himself implies
when he says that it has been 'discovered solely by ex-
periment.' Yet, certainly, the conviction of the ob-
jective reality of matter was no less strong before the
discovery of its indestructibility was made. And
though we cannot represent to our minds the annihila-

¹ See Spencer's *First Principles*, p. 172-3.

tion of matter, any more than its creation from nothing, yet supposing we had evidence that matter could be destroyed, it is not clear why we should cease to ascribe to it objective reality before its destruction. Its qualities of extension, resistance, &c., would remain so long as it existed.

But the peculiarity of energy is that it is not a phenomenon at all, as distinguished from matter and its movements. It is, as we have seen, a contribution to the facts made by our minds, a mental addition, which it may be legitimate to make, but which is suggested by the phenomena, and not presented among them. How the suggestion arises has just been pointed out. There are such uniformities of movement and of rest as would occur if an indestructible something, now operated as movement, and now remained latent. We can hardly interpret the facts without postulating its existence; the facts of resistance, and the possibility of performing again so much work, or movement, as was effected before, require us to suppose something which exists in the interval, and not a mere negation of movement. And besides, there is our irresistible conviction that movements are effected by power. Although, on the other hand, if we assume the existence of energy, it is not easy, or possible, to represent to our minds in what form it exists when latent, or operative, as distinguished from the movements produced. 'Heat is not the mere motions,' Professor Tait tells us, 'but the energy of the motions; a very different thing.' But if the energy is not the motions, in what sense is it expended in them; and in what respect does it differ when operative from what it is when latent? In fact, it is impossible to represent energy to the mind at all, latent or active, if it be regarded as a positive something.

But an objection to the recognition of energy remains more serious than the difficulty of representing it to the mind. We have seen that energy, which is something 'very different' from the various modes of motion, is not itself a phenomenon, but is inferred to exist from the character of the movements which are presented to us. But is it not a violation of the recognized procedure of science to postulate the existence of anything beside the phenomena, especially of anything in the shape of a cause? Let us hear Mr. Mill, as an authority on scientific procedure. When treating on the Law of Causation in his *System of Logic*, he writes:¹

'I presume, then, that when in the course of this enquiry, I speak of the cause of any phenomenon, I do not mean a cause which is not itself a phenomenon; I make no research into the ultimate, or ontological cause of anything. To adopt a distinction familiar in the writings of the Scotch metaphysicians, and especially of Reid, the causes with which I concern myself are not *efficient* but *physical* causes. They are causes in that sense alone, in which one physical fact is said to be the cause of another. . . . The Law of Causation, the recognition of which is the main pillar of inductive science, is but the familiar truth, that invariability of succession is found by observation to obtain between every fact in nature and some other fact which has preceded it. . . . To certain facts, certain facts always do, and, as we believe, will continue to succeed. The invariable antecedent is termed the cause; the invariable consequent, the effect.'

Now, the only facts presented to us are successions

¹ Vol. I., pp. 358-9.

of movement; they constitute the antecedents and consequents; they alone are the physical causes and effects. But if, in addition to them, and 'very different' from them, we postulate energy as an 'objective reality,' we transcend physical causes,—for of them we have a *complement* in the antecedent movements,—and our energy is an efficient, ontological cause, if it is a cause at all; it is no mere antecedent, but a *power* which produces the movements as effects. But it is the proper rule and boast of science that it does not go beyond the physical causes, or antecedent phenomena of events, and has abandoned the search for efficient causes, and for the power which produces effects. The reason for this is nowhere stated more clearly than in the essay of Hume, which contributed largely to establish the truth that in physical causation we can discover no tie uniting phenomena except that of invariable succession.

'There appears not,' he writes, 'throughout all nature, any one instance of connection which is conceivable by us. All events seem entirely loose and separate. One event follows another; but we can never observe any tie between them. They seem conjoined, but never connected. And as we can have no idea of anything which never appeared to our outward sense or inward sentiment, the necessary conclusion seems to be that we have no idea of connection or power at all; and that these words are absolutely without any meaning, when employed either in philosophic reasonings or common life. But there still remains one method of avoiding this conclusion. . . . When any natural object or event is presented, it is impossible for us, by any sagacity or penetration, to discover, or even conjecture, without experience, what

‘event will result from it, or to carry our foresight
 ‘beyond that object, which is immediately present to
 ‘the memory and senses. . . . But when one
 ‘particular species of event has always, in all instances,
 ‘been conjoined with another, we make no longer any
 ‘scruple of foretelling one, upon the appearance of the
 ‘other, and of employing that reasoning, which can
 ‘alone assure us of any matter of fact or existence.
 ‘We then call the one object, cause ; the other, effect.
 ‘We suppose that there is some connection between
 ‘them ; some power in the one by which it infallibly
 ‘produces the other, and operates with the greatest
 ‘certainty and strongest necessity.

‘It appears, then, that this idea of a necessary con-
 ‘nection among events arises from a number of similar
 ‘instances, which occur, of the constant conjunction of
 ‘these events ; nor can that idea ever be suggested by
 ‘any one of these instances, surveyed in all possible
 ‘lights and positions. But there is nothing in a num-
 ‘ber of instances, different from every single instance,
 ‘which is supposed to be exactly similar ; except only,
 ‘that after a repetition of similar instances, the mind is
 ‘carried by habit, upon the appearance of one event,
 ‘to expect its usual attendant, and to believe that it
 ‘will exist. This connection, therefore, which we feel
 ‘in the mind, this customary transition of the imagina-
 ‘tion from one object to its usual attendant, is the
 ‘sentiment or impression from which we form the idea
 ‘of power or necessary connection. Nothing farther is
 ‘in the case. Contemplate the subject on all sides ;
 ‘you will never find any other origin of that idea. . . .
 ‘When we say, therefore, that one object is connected
 ‘with another, we mean only, that they have acquired
 ‘a connection in our thought, and give rise to this

'inference, by which they become proofs of each other's existence.'¹

In a note to this essay, Hume mentions the sense of effort we experience in effecting movement as contributing to give us the idea of power :—

'No animal can put external bodies in motion without the sentiment of a *nisus* or endeavour; and every animal has a sentiment or feeling from the stroke or blow of an external object that is in motion. These sensations, which are merely animal, and from which we can *à priori* draw no inference, we are apt to transfer to inanimate objects, and to suppose that they have some such feelings, whenever they transfer or receive motion. With regard to energies, which are exerted, without our annexing to them any idea of communicated motion, we consider only the constant experienced conjunction of the events; and as we *feel* a customary connection between the ideas, we transfer that feeling to the objects; as nothing is more usual than to apply to external bodies every internal sensation which they occasion.'

To the same effect Mr. Mill writes :—

'It is allowed on all hands that part, at least, of our idea of power, is the expectation we feel, that when the cause exists, we shall perceive the effect; but Hume himself admits that in the common notion of power there is an additional element, an animal *nisus*, as he calls it, which would be more properly termed a conception of effort. . . . Every one of our muscular movements has to contend against resistance, either that of an outward object or the mere friction and weight of the moving organ; every voluntary motion is consequently

¹ Hume's Essay—*Of the Idea of Necessary Connection*, Part II.

‘attended by the muscular sensation of resistance, and, if sufficiently prolonged, by the additional muscular sensation of fatigue. Effort, considered as an accompaniment of action upon the outward world, means nothing, to us, but those muscular sensations. Since we experience them whenever we voluntarily move an object, we by a mere act of natural generalization, the unconscious result of association, on beholding the same object moved by the wind or by any other agent, conceive the wind as overcoming the same obstacle, and figure it to ourselves as putting forth the same effort. Children and savages sincerely mistake it for a conscious effort, we outgrow that belief; but . . . the consequents being the same, when the mind is no longer able to suppose an exact parity in the antecedents, it still thinks that there must be something in common between them: and when obliged to admit that there is volition in one case, and a mere unconscious object in the other, it interposes between the antecedent and the consequent an abstract entity, to express what is supposed common to the animate and the inanimate agency—through which they both work, and in the absence of which nothing would be effected. This purely subjective notion, the product of generalization and abstraction acting on the real feeling of muscular or nervous effort, is power.’¹

Now the energy of which natural philosophers speak, and which they distinguish from its manifestations in movement, stands in the same relation to movement which power is recognized as occupying in the passages just quoted. That is to say, without accepting as adequate the purely mental character ascribed to

¹ *Examination of Sir W. Hamilton's Philosophy*, pp. 306-7.

power by these writers, it is true that power is not presented among phenomena, but inferred from them. The same holds of energy—the two are one; the laws of the latter, as now ascertained, constitute a distinctly formulated doctrine of power. And the arguments of the above passages, which have been held conclusive against the recognition of power, are conclusive against the recognition of energy. To maintain the objective reality of energy, is, then, to pass beyond the world of phenomena, to which it is the claim of science to confine itself, and to ascribe objective reality to something which lies outside that world. If science is justified in doing so, it is justified in transcending phenomena; and our contention that things as they seem demand things unseen to account for them, receives a new exemplification. And in this case, it is not only the deeper investigations of philosophy which make this demand, but physical science itself recognizes the existence, and enunciates the laws, of an ‘objective reality’ which lies outside the world of phenomena. If this proceeding is legitimate, it is at least quite inconsistent with the claim of science to recognize phenomena alone.

And that is not all. For whatever view be taken of ultimate efficient causation, the contention of Hume and Mill in passages lately quoted from their writings, is admitted on every hand, that power is not presented to us among external phenomena, which exhibit only uniformities of coexistence and successions. Certain consequents invariably follow certain antecedents; and the antecedent is termed the cause, the consequent, the effect, on the ground of the invariability of succession alone. Physical causes and effects are, to our knowledge, simply these antecedent and consequent phe-

nomena. But if, as Professor Tait teaches, energy is not 'the mere motions,' but 'a very different thing,' it is not a physical cause at all; for these consist of the antecedent phenomena, among which energy does not appear. 'When I speak of the cause of any phenomenon,' says Mr. Mill, 'I do not mean a cause which is not itself a phenomenon.' 'Between the *phenomena* which exist at any instant, and the *phenomena* which exist at the succeeding instant, there is an invariable order of succession.'¹ The antecedent phenomena of any effect are themselves, then, its physical causes, and form the complement of those causes, which, when they occur, are invariably followed by the effect. The energy, which is 'a very different thing' from the antecedent phenomena, is therefore 'a very different thing' from the physical causes of the effect; it holds no other place than that of an efficient cause. The movements are the physical causes. The energy of the movements is the *power* which produces them. Therefore, to maintain the objective reality of energy as something distinct from the movements it produces, is to transcend phenomena and physical causation; and, in opposition to the usual boast of science, to proclaim the discovery and objective reality of an *efficient* cause. It is not affirmed, hence, that the science of energy is illegitimate, but only that it takes us beyond phenomena; and that those who investigate it are not students of phenomena merely, but of what lies outside them. If the doctrine of energy is necessary to a scientific study of phenomena, then the study of phenomena compels the recognition of efficient causes. In other words, our contention is maintained, that it is impossible to confine our view to phenomena alone.

¹ *Logic*, I., 358-9.

The causal judgment, followed to its deepest conclusions, cannot rest satisfied with sequence as the only tie between phenomena invariably connected; yet it is commonly supposed that physical science need go no further than that. But the doctrine of energy seems to show that even science is compelled to transcend phenomena, and recognize efficient causation. And thus Professor Tait's argument on behalf of the objective reality of energy, is an argument for the insufficiency of phenomena, and for the necessity of recognizing a reality behind them. And what is that reality but the power unknowable of which Mr. Herbert Spencer speaks? In other words, we have left the world of appearances, and stand face to face with the grand reality of Ontology.

Against Professor Tait's contention that our evidence for the existence of energy is similar to our evidence for the existence of matter, it has been urged that matter and its changes are *phenomena*, while energy is not, but requires us to transcend phenomena, and *infer* its existence. And this argument seems conclusive, when we are avowedly dealing with phenomena, and with phenomena alone, as science professes to do. But when we go deeper, and enquire into the essential nature of phenomena, undoubtedly the matter takes a different shape. All external phenomena are conceived to be effects wrought on us by outside objects. Those effects are feelings, due, we say, to the operations of a something which operates. But in the last analysis, the something or object resolves itself into a power which produces these effects on us, and the permanence, the very existence of the object, is to us nothing but the continued activity of the power un-

known which produces the continuous series of effects. As Mr. Herbert Spencer maintains, *existence* means to us simple *persistence*, and matter resolves itself into the continued activity of the power manifested by its effects.

From this point of view, our evidence for the 'objective reality' of energy, or power, is indeed irresistible; but instead of saying that it is as great as that which we possess for the reality of matter, it would be truer to say that our conception of matter, deeply considered, merges in that of power. In other words, the two points of view are incompatible. We may take either, but we cannot, at the same time, occupy both. Phenomena, and their regularities of coexistence and succession, where the movements are themselves the physical and only causes recognized, constitute the proper, but limited province of the physical student. But when he postulates an energy distinct from the movements, he transcends phenomena, and proclaims an efficient cause. He speaks the truth; but now he occupies a different standpoint, and one from which the world of matter appears no longer as such, but only as a series of effects in feeling wrought upon us by power. But Professor Tait combines these incompatible views. 'If,' he says, 'we find anything 'else in the physical world whose quantity we cannot 'alter, we are bound to admit it to have objective 'reality as truly as matter has.' Undoubtedly; but the power which confessedly we find, does not, as he says, satisfy this test, for we do not find it 'in the physical world,' and so may not recognize it there.

§ 18. SCIENCE CANNOT RECOGNIZE ANY EXTERNAL CAUSE
OF SENSATION.

From the point just raised, we may derive one more piece of evidence that if, assuming the material world which we perceive to exist outside us, we follow out the interpretations of it which physical science gives, we are landed in impossible conclusions. For what sort of existence does science enable us to ascribe to the material world? It explains the mechanism of perception to be such, that external objects can be made known to us only by the effects in feeling which they produce on us. That is to say, external objects are the assumed causes of these feelings; and we suppose the continued existence of the objects, to account for the continued succession of the feelings. But if we adhere to physical causation, as science professes to do, we shall recognize no other causes of our feelings than previous feelings, for they are the only antecedent phenomena.¹ While, if we look deeper for the efficient causes of feelings, we can regard them only as the manifestations of inaccessible power. From the standpoint of science, then, the cause of an external perception is an antecedent set of feelings which are acts; from the standpoint of philosophy, it is a power. In neither case are we led to external objects or entities, which, on the showing of science itself, could be apprehended only by their effects on us if they existed; but the assumption of their existence is without warrant, for external phenomena resolve themselves into objectified feelings ascribed to external

¹ [Properly speaking, since feelings are not physical phenomena, science cannot recognize them, and consequently can know nothing of external objects as their physical causes.—Ed.]

power ; and hence the perception of a material object is an elaborate intellectual product. And if, according to the boast of science, we confine ourselves to physical causation, we shall refuse to recognize power, and shall have left, therefore, only a series of feelings which are transient acts, and nothing whatever which *exists* or *persists*. Moreover, each so-called continuous feeling is not strictly *one*, but is made up of a series of minima of similar feelings, only the last member of which exists at once ; and for the similarity and seriality of these minima, we must trust entirely to memory. It comes to this, then : if we accept the account which science gives of our apprehension of external objects, we cannot perceive them as existing, for we can know only their operations, which are transient acts, incompetent to inform us of aught which is permanent. But to say that we perceive even the operations of external objects is incorrect, if we follow the conclusions of science to their consequences. For we know only their effects on us, which are feelings, themselves transient acts likewise, containing nothing permanent, unless permanence be ascribed to the Ego which experiences them ; to do which, is to predicate something additional to the phenomena of feeling.

It follows that, on the showing of science, a permanently existing external world is not presented to us at all. Our notion of it seems made up of sensations of resistance, movement, sight, &c., continually experienced, combined, and objectified ; and the necessary recognition of sensations as successive presupposes something permanent in the Ego which apprehends them so ; and hence our conviction of the permanence of the Ego is at least *logically* anterior to our conviction of the world as permanent ; the latter is possible

only through the former ; and yet the existence of the external world is freely assumed by many who recognize nothing in mind but a series of fugitive conscious states.

§ 19. SUMMARY OF THE ARGUMENT AGAINST REALISM.

We have now obtained, from many different quarters, evidence which points to the conclusion repeatedly expressed, that Materialism, when followed to its logical consequences in this direction and in that, confutes the claim made for it to represent things as they *are*, and proves that its assertions can hold good only within the limits of phenomena, or respecting things as they *seem*. In the first place, we have seen that physical science, which deals with material phenomena, is not only, as it contends, wholly destitute of evidence that intelligence *influences* physical events, but that intelligence is *present* anywhere, for it discovers no facts of consciousness even in the human brain. Obviously it could not do so, if consciousness effects no changes there ; for if it effects no changes, it makes no sign, and does nothing which could be evidence of its presence. The futility of all attempts to explain the connection between brain-changes and thoughts, which has been sufficiently shown in our examination of these attempts, follows as a matter of course. No ingenuity can discover the way in which two factors co-operate, when there is but one.

But as each of us *is conscious*, the proper conclusion is that, however legitimate and reliable the conclusions of physical science are within the limits of material phenomena, they are invalid beyond them. They hold good of things that *seem*, but even exclude the possibility of some things that *are*.

The necessity of this regarding scientific facts as valid only within the limits prescribed by the name *phenomena*, which they bear, was confirmed by our examination of the mechanism, by means of which science teaches that we perceive the external world. Experiments were adduced which show that the supposed signs of consciousness are exhibited only in the case of impressions which reach the brain, short of which nothing but nerve-waves are concerned. It follows that we cannot possibly have any direct intuitive knowledge of what takes place outside our brains, or of aught which exists outside them. As Professor Helmholtz teaches, our sensations can be at most *non-resembling signs* of external objects. To this conclusion we are brought by science, faithfully interpreting the mechanism of external perception. In other words, it is a necessary inference from locating consciousness in the brain, in the absence of evidence, that if it were situated there, it could not perceive the world.

A difficulty allied to this is, as we saw, the impossibility of accounting, on scientific grounds, for the existence of any correspondence between a percipient feeling in the brain, and the external object it perceives. The brain-changes which accompany the feeling, and the object said to be perceived, are more or less remote links in a complex chain of physical sequents; and, physically speaking, these two links have no special connection with each other, no connection at all, except through the intervening links. And yet the feeling which accompanies the brain-changes in question is affirmed to represent the distant object in a very special way, to perceive it, but not to perceive the intervening links. If it is so, why is it so? Science is bound to

explain this strange correspondence, but is incapable of doing so ; and for the sufficient reason, that the feeling is not a fact of physical science, and ought not to be recognized at all.

We passed on to notice the similar difficulty which exists in regard to the correspondence between a purpose and its realization. Similar, because the only difference is one of order, the sequents in this case proceeding outwards from the brain, while in the other they proceed inwards towards it. That is to say, when we perceive an external object, it is supposed that sequents proceed from it to the brain, and there produce the perception. Whereas, in the case of a realized purpose, sequents are supposed to proceed from the brain, and produce an external fact which conforms to the feeling there. In both cases it is a correspondence between distant sequents which has to be explained.

All was granted in this case which the most rigorous physicist could ask. It was assumed that no interruption of physical continuity takes place between the formation of a purpose and its realization. Yet it is a matter of constant and regular experience that the purposes men entertain may be brought about. Examples might be drawn from any of the countless purposive acts which we are in the habit of performing every day, as well as from projects which take years to accomplish. Here again, then, are remote sequents which sustain a very special relation to each other. Or rather—and this complicates the problem—it is not another physical sequent which sustains a special relation to the realized purpose, but a mental fact lying outside the series of physical sequents, although concomitant with one of them. It is admitted that the purpose has no efficacy to bring about its realization. Then how

is it that we can continually depend on the subsequent fact conforming to the antecedent purpose? Granted that, physically speaking, we have no power to realize the mental fact, purpose, we certainly have continually foresight that it will be realized. And what physical explanation can be given of that foresight?

It appears undeniable that, from the standpoint of physical science, human design is as inadmissible as we are taught that divine design is; that the achievements of men and nations are in no degree owing to the purposes of those who performed them, but would have taken place just the same in the absence of purpose, in the absence of consciousness, being exclusively due to physical causation. And we saw that no relief from this conclusion is gained by supposing purpose and brain-change essentially one, though phenomenally two. The so-called purposive actions of men exactly resemble, then, the functions of organic nature, and the mighty aggregate of changes occurring in the entire Kosmos, in this respect; that, from the standpoint of material science, all are accounted for by physical causation, and leave no room for the guiding influence of intelligence. Whence the inference is not doubtful, if physical science can find no room at all for purpose and intelligence, its conceptions of the universe must be partial and illusive. To deny to our designs any influence in securing their realization, to leave unexplained even the foresight which at least we have in regard to countless so-called purposive actions every day, is a *reductio ad absurdum* of the theory which lands in such conclusions.

The next-considered difficulty which it seemed impossible to explain from the standpoint of physical science was the ordered succession of our conscious

states, the *rational* character of our mental life. It is the legitimate contention of the physiologist that physical laws (which are essentially of a mechanical kind) regulate all the changes which take place in the brain as elsewhere, and that conscious states are not as such members of the series to which brain-changes belong. Either, then, conscious states form an independent though parallel series of sequents, which is virtually the supposition of Leibnitz, in his Pre-established Harmony, and cannot be seriously entertained; or each separate thought and feeling is, in some unknown way, the concomitant of a particular brain-change, and emerges because the brain-change takes place without any causal connection whatever with its *conscious* antecedent. Whence it follows that the mental series must be determined entirely by the physical series, and the relation of the mental links to each other be purely causal. But if so, then it is urged that the *rational* character of the mental series is quite unexplained and inexplicable. For how is it possible, it was asked, that changes of a purely mechanical order, accompanied by mental equivalents, should give rise to groups and successions among these, expressed by the distinctively mental laws of association, and exhibiting the *rational* character of the conscious life of man?

We found that certain suggestions made to escape this difficulty would not bear examination. The two series in question have been represented as essentially identical, though phenomenally distinct; and in consequence of this underlying unity, we are supposed to be at liberty to ascribe causality indifferently to either series even in respect to the other. But it was shown that the standpoint of science, from which we are

arguing, assumes material phenomena to be what they seem, while to recognize the identity of the two series, to occupy what Professor Wundt calls 'the point of view of Monism,' is to take our stand in the world of Ontology, and imply that phenomena are *not* what they seem. It is, in a word, to abandon Materialism. If, indeed, that were understood to be the meaning of this suggestion, if it were recognized that those manifestations of consciousness which we call external objects, and also those which we call subjective, are mere phenomena, indicative of a reality incapable of direct apprehension, that would be a position not open to the criticisms which have been urged above; but, as just said, it would be an abandonment of the position taken by physical science.

It was pointed out that a similar difficulty arises, and presses, if possible, with greater force, when, from the standpoint of science, we are called on to account for the moral and spiritual nature of man. The question was asked—How comes it that a complex succession of feelings, not causally related, but following the order of a mechanically-ruled series of movements, exhibits the high characters of man's moral and spiritual life, of which the concomitant and governing movements are wholly destitute? Is it conceivable that the rare and exalted mental groupings which a finely-strung moral nature exhibits, which praise and prayer imply, follow as the chance results of the collisions of countless nerve-waves? Have we not here too a *reductio ad absurdum* of the *real* character of facts which lead to such conclusions?

Other most fundamental facts of our mental constitution came next under review, which, if our mental life consists simply of conscious states accompanying nerve-

changes, and dependent on them, demand some explanation from the physical side, and fail to receive any. Our knowledge of the past, by means of memory, is among these. Conscious states, like their corresponding nerve-changes, occur in series; that is to say, one passes away before the next arises, and we are conscious only of the one now present, a past feeling being non-existent. Then how can we have any knowledge of the past? If A and B are two members of a series of *successive* feelings it is a contradiction to affirm that they *coexist* in consciousness. If it be said that the second feeling arises before the first has passed away, there is no doubt, so far as that is possible, a present consciousness of both; but to that same degree the feelings in question are synchronous, and not successive, and it is as synchronous that consciousness must apprehend them, if it apprehends them truly. It may be said, again, that the antecedent feeling, though it exists no longer, may be represented in consciousness by a similar feeling which suggests it, along with its proper consequent. But even if we could be conscious of two feelings at the same time, which philosophers deny, there would still be two synchronous feelings; and why should one of them call to mind another feeling which has vanished.

The unity of thought into which ideas must be brought to be compared, and all the complex integration of which they are capable, is just as inexplicable as memory is.

Our inability to account for our conviction of the permanence of the Ego, which it is impossible to doubt, and which is obviously indispensable to mental life, was seen to be a part of the same difficulty. Our mental life is presented to us as a succession

of conscious states; but it is impossible that a mere series of feelings should give us the sense of an enduring Ego which experiences the feelings, and without which we could not even know them as a series. We saw that Mr. Mill, who, professing to confine himself to phenomena, treats mind simply as a series of feelings, frankly admits that the fundamental facts of memory and the enduring Ego are unaccountable from this point of view. And that is the contention insisted on in these pages. There could be no memory, and no enduring Ego, if mind were a mere series of feelings. And mind is no more, if its states are simply concomitants of nerve-changes. Nay, it is less; for, on Mr. Mill's view, the conscious states are causally linked together; whereas science teaches that the causal links exist between the nerve-changes without any rupture, and it follows that the mental states *as such* are not connected causally.

And we saw that even in calling mind a mere stream of feelings, Mr. Mill transcends phenomena. For since that supposition leaves us, as just shown, destitute of evidence that we have had feelings in the past, we have no warrant to assume that we possessed them. They are not among phenomena. Only the now present feeling properly bears that name. To be confined to phenomena is to be confined to that.

Difficulties closely related to those just considered belong, it appeared, to our conceptions of time and space, and point to the conclusion that these also cannot be what they seem to us. The present, in which alone we live, in which alone the universe, as conceived by us, exists, is, strictly considered, no *period* of time at all, nothing but the transition from the past to the future, and too short for anything to

take place in it, though, according to our notions, everything takes place in it. For the smallest period of time which could be assigned to it, would have an earlier and a later half, and these halves would be made up, the first of the no-longer-existent past, and the second of the not-yet-existent future. Only the timeless transition between could be assigned to the actual present. And that inappreciable instant of transition would, moreover, be too brief to allow us to apprehend a single feeling in it, for we have seen that a certain duration of feeling is essential to consciousness. Hence some direct apprehension of past feeling seems essential even to present consciousness. But that is impossible, according to our conception of time.

We seem, moreover, to be conscious of a succession of feelings, although all the earlier of them must have ceased to be. Past feelings, of course, can be apprehended only as pictured in a present consciousness. And as the present is too short for us to apprehend even the feeling which takes place in it, it results that none of our feelings can be apprehended in the time when they occur, but all must be known as pictured in a phenomenal representation. So that if time were as it appears to us, we could know nothing outside the present, and even the present would be too fugitive to be known.

In regard to space, it was shown that since, according to modern experiments, consciousness is situated only in the brain, we cannot be actually conscious of points of space outside us, and we certainly are not conscious of the points in the brain where feeling resides; so that our conception of space can be only a picture, which may or may not correspond to a reality. Space spreading immeasurably around us, as Realism

assumes that it does, we could not perceive it if it existed, as science explains perception. At best we can have but a mental representation of it, and have no guarantee that it images the reality truly.

Our notions of time and space, then, land us in impossible conclusions. But if these notions are conditioned and distorted by our point of view—if, as Kant taught, they are forms of our thinking, and the reality is other than they—it may be that knowledge of what we call the past and the distant is possible to us, which, we have seen, would be impossible if the reality corresponded to our conceptions.

Our imperfect conceptions of time and space involve us in perplexing contradictions respecting motion, some of which were recognized early in the history of philosophy, and were urged even then, not as the mere paradoxes they are commonly conceived to be, but—as Mr. Grote points out in his work on Plato¹—as evidence that our conceptions, derived from phenomena, cannot truly represent the real. They support, therefore, the very conclusion maintained in these pages. It is obvious, for example, that a portion of space and of time greater than the barest minimum is necessary for the smallest movement. For nothing can move without traversing space and occupying time, and that implies a space moved into as well as a space moved out of, and the space *moved into* cannot be entered until *after* the space *moved out of* has been left. And, therefore, *the past plus the present* is necessary for the smallest movement; and the past being no longer in existence, nothing which requires it can exist, but can only be pictured in a present thought. Moreover, we speak with some inaccuracy when we call a movement

¹ Vol. I., pp. 97-104.

a single fact; for it is an aggregate made up of successive minima of motion, even the latest of which, we have seen, is too prolonged to exist at one time; and, as recently pointed out, we transcend phenomena, and assume the trustworthiness of memory, when we affirm that previous minima of perception and movement have existed.

We have seen that the mere recognition of *energy*, which holds such a prominent place among the conceptions of modern science, proclaims that even science finds it impossible to confine itself, as it boasts, within the limits of phenomena. For all the phenomena of the external world are reducible to matter and motion; and it is allowed on all hands that movements, as presented to us, are connected by no other ties except relations in time and space; physical causes and effects mean no more than phenomena uniformly antecedent and consequent. Natural philosophers, indeed, are accustomed to speak of energy as distinct from motion, and some of them, as we have seen, insist strongly on the distinction between them; but the phenomena consist solely of movements, and the conception of energy is a contribution made by our minds to account for the phenomena, and not anything presented among them. It can be defined only in terms of the motion it has produced, or is supposed to be capable of producing. Nevertheless, the supposition of an invisible, indestructible energy, now latent, now operating in movements, is found indispensable even to scientific conceptions of the world and its changes, and Professor Tait claims 'objective reality' for it as much as for matter. This necessity has an important bearing on the conclusion urged in these pages, that the science of phenomena is inadequate to account for the facts with which we have to deal. For here it is not only the deeper enquiries

of philosophy which oblige us to recognize something behind phenomena, but physical science is compelled to do the same, to transcend phenomena, and postulate an invisible potency beyond them. Physical science, moreover, which professes to recognize in causation nothing but the fact of uniform succession, and to regard each set of antecedent phenomena as themselves the sole causes of their consequents, is compelled to ascribe to energy, which is not among phenomena, a power which is none other than causal efficacy. And, therefore, to Professor Tait's contention that energy has as good a claim to 'objective reality' as matter has, the reply must be, that if science is to confine itself to phenomena, the claim cannot be allowed; for energy is not a phenomenon at all, but a power assumed to account for phenomena, and involves, on the part of those who assume it, a recognition of the inaccessible world behind appearances. If that recognition be made, 'objective reality' will be accorded to power; but to make it, is to go beyond the special standpoint of the materialistic hypothesis, and to occupy one hardly consistent with it. For that hypothesis assumes a material world as the cause of our external perceptions. If, then, we discover that it is not that world, but a power behind it, which is really operative, the assumption of the world becomes superfluous, and we are left with a series of effects in feeling wrought upon us by power. Hence, as affirmed before, instead of saying that energy has as good a claim as matter to 'objective reality,' it would be truer to say that, if we recognize power at all, our conception of matter will be merged in it. Nevertheless, the inconsistency of recognizing both may, like other inconsistencies, be usefully permitted for practical purposes.

Another difficulty was shown to arise in connection with the one just named. Science assumes the existence of the material world, and that it is made known to us, and communicates with us, by its operations, transmitted to us through the mechanism of perception. That is to say, external objects are not themselves apprehended by us, are not themselves phenomena, but we assume the existence, that is, continued persistence of the objects to account for the continued succession of effects which their operations produce on us. Then, in the first place, if we confine ourselves to physical causation, as science professes to do, we must look for the causes of these effects *among antecedent phenomena alone*; in other words, *among preceding effects on us*, and not among external objects, *which are never phenomena themselves*. To recognize *them* as causes, is to seek causes outside phenomena; it is, in fact, to affirm *efficient*, and not physical causes; and as we have just seen, this is to render the supposition of outside *objects* superfluous, and to leave us with power alone as the efficient cause of the effects we experience. And, in the second place, since all we know of outside objects is the successive effects which they are supposed to produce on us, and those effects are all transient acts, what right have we to infer, from a series of evanescent minima of movement, the *persistence*, that is, the *existence*, of an object? The *physical* cause of a transient act is an antecedent act equally transient; its *efficient* cause lies beyond the province of science, and will not be a material object, but a *power*, which needs no material object for its seat. The sense of the Ego and of Power are the only invariable elements in our experience, which can be affirmed to indicate something *persisting, existing*, to correspond to them.

These difficulties arise out of the inconsistent position occupied by science. It explains that external objects telegraph their existence to the brain-centres to which consciousness is relegated. It follows, that we can never perceive these objects themselves, but only their effects. Yet the materialistic hypothesis, on which science proceeds, assumes that external objects exist and are perceived—the sole evidence of their existence being that we perceive them. Hence, in interpreting Realism, science disproves it. It shows that the permanently-existing world which it interprets could be apprehended only in transient and distant effects, which could never inform us that the remote and permanent objects assumed to exist were their causes. The truth is, that various sensations of sight, touch, muscular effort, &c., agglutinated together, *constitute* our composite impressions of external objects; and being also associated with the supposed external *power* which causes them, they are, in consequence, projected outside us, though really belonging to ourselves; and *they are* the objects we say we perceive.

CHAPTER III.

TRANSCENDENTALISM, INVOLVED IN NECESSARY INFERENCES FROM PHENOMENA.

§ 1. THE INCONSISTENCY OF REALISTIC SCIENCE.

AND now, having noted these various difficulties, the question must be asked, What is the conclusion to be drawn from the many evidences we have found that material phenomena cannot truly represent what is? The fact seems to be, that we are confronted by incommensurable and incompatible sets of phenomena. The common assumption is that all phenomena, both the mental and the material, belong to one scheme of things, and should be shown to be consistent portions of it; and the endeavour has constantly been made, and is being made still, to discover the relation between them, and exhibit their harmony. But the endeavour has always failed, and can never succeed, if, as seems to be the case, the two great classes of phenomena which confront us do not belong to a single homogeneous scheme. And to recognize the non-conformity between them is a healthier proceeding than to tamper with the facts in order to fit them to a theory professing to account for them all. Such an unscientific treatment of the difficulty is resorted

to when, in the absence of any physical trace of their presence, thoughts are proclaimed to be incomprehensible concomitants of certain brain-waves, whose movements, determined by mechanical laws, regulate all mental successions. We have seen reason to believe that mental and physical phenomena cannot be thus combined into any one scheme, because they are truly incommensurable and incompatible.

It may be asked—‘Is the scheme of nature, then, inconsistent with itself? is it essentially incapable of being harmonized? Not so. But we have to deal with *phenomena*, that is, not with the facts of nature themselves, but, as the name imports, with those facts, *as they are presented to us*; and such a view of them must necessarily be partial and defective, and the parent of illusions, *if it is regarded as complete*. These illusions, illusions of position and perspective alone, reveal themselves in the contradictory results to which, as we have seen, science conducts us when it carries out the supposition that material phenomena are what they seem. The illusions, as just implied, are but those which would arise also in regard to objects seen in perspective, if we took their apparent relations to be their real relations, as we should do if we never changed our position in regard to them.

The inconsistency of which the scientific world seems guilty at present is that, though recognizing freely that the objects of the material universe are *phenomena*, and brought by Professor Helmholtz to the inevitable conclusion that our sensations can be no more than *non-resembling signs* of the external objects which they are supposed to indicate, the material universe is nevertheless still regarded and treated, by him no less than by others, as being what it seems, and the scien-

tific conclusions which hold good of its appearances to us are tacitly assumed to be the valid and reliable laws of the external universe itself. It is, of course, indispensable for practical purposes to treat the world as being what it seems, and it is perfectly proper for science to formulate the laws which, from our standpoint, external phenomena regularly observe; but when, by carrying out the materialistic hypothesis, science has proved that the world as it is cannot resemble the world as we know it, it is preposterous any longer to predicate of the first what holds good only of the last. Conclusions which are perfectly valid respecting phenomena must be recognized as having no validity beyond them. And yet it is notorious that the conclusions of science respecting physical phenomena are viewed on all hands as conclusions respecting the material universe itself, presumed to *be* what it *appears*; the facts of science are proclaimed to be the most, if not the only, certain and indisputable facts to which we can attain; and any hyper-physical opinions which do not harmonize with them are rejected as untrue, on the simple ground of their inconsistency with what, by a strange misnomer, are called the conclusions of '*positive*' science. What is this but to ascribe an ontological character to conclusions respecting *phenomena* which, on the very showing of science, cannot hold good of the world as it is?

Except in the case of the instructed who profess to be accurate, the mistake is a natural one indeed, and its reason is obvious. As we always see the world from the same point of view, its facts always strike us as viewed from that point; and thus its appearances to us have what Mr. Herbert Spencer aptly calls a '*relative reality*,' which holds good for all practical

purposes. But their reality is none the less only relative to our standpoint, and conclusions drawn from them have no validity elsewhere. It is this which is constantly forgotten, both by the adherents and opponents of physical science. The confusion enters more deeply than would be suspected into the language and ideas of science. For, let us ask the simple question, What is meant by the material phenomena with which science deals, the external objects and changes which we perceive? Science informs us that consciousness arises only in the brain-centres, at some distance, therefore, even from objects which are in contact with the body; and the mechanism of perception is such that, as Professor Helmholtz points out, our sensations can be at most non-resembling signs of external objects. What, then, are the material phenomena with which science deals? Are they the external and more or less remote material objects indicated by the signs? or are they the signs themselves, consisting of consciousness, and confined to the brain?

It is constantly assumed that physical science concerns itself with the external objects indicated by the non-resembling signs in the brain. For those objects are supposed to spread round us on every side, while their signs are said to be confined within the dark chamber of the skull. And yet the conclusion to which science conducts Professor Helmholtz is that these signs give us our only information respecting the external world, that we apprehend it exclusively by means of these symbols in consciousness, which cannot resemble the things which they signify. It follows that the things signified are not themselves *phenomena* at all, for they never appear; they cannot, therefore,

be the objects with which science deals. We are driven, therefore, to the other alternative, and are obliged to suppose that science deals only with the non-resembling signs, which alone are *phenomena*. On this supposition, science has to do with the symbols only which consist of feelings, and do not resemble the objects to which they are assumed to correspond. If so, conclusions which hold true of the signs will not necessarily hold true of the things signified. Some assertions may apply equally to both, but others will not do so; and we can have no assurance that what we predicate of the signs may be predicated of the things signified. We can have no assurance, because the things signified are never before us to be compared with the signs; and in their perpetual and inevitable absence, we cannot form any judgments as to the relations between them and their representatives; even their very existence becomes problematical. Professor Helmholtz, as we saw, assumes the case to be otherwise. He teaches that our sensations correspond to the objects of the external world 'in some such way as written characters or articulate words to the things they denote.'¹ It was pointed out (pp. 165-6) that this parallel fails. Certain words are the signs to us of certain conceptions, and the conceptions as well as the words, the things signified as well as the signs, may enter consciousness; but it is Professor Helmholtz' own conclusion that the objects of the external world can be known to consciousness *only* through their representative signs; that is to say, the things signified never, in this case, enter consciousness.

A still more important consideration is, that to recognize the things signified at all, under these cir-

¹ *Lectures on Scientific Subjects*, p. 54.

cumstances, is to transcend phenomena, with which alone science professes to deal, and to postulate an invisible, inaccessible, and wholly different world behind them. That world behind phenomena is the world of Ontology, of things-in-themselves, which it is the boast of science to ignore altogether. And yet, whenever it tells us of the material universe which stretches immeasurably beyond the isolated centres in which consciousness is supposed to have its seat, it is making assertions respecting this unapproachable world which lies for ever outside the symbols in consciousness of which alone, as we have seen, the *phenomena* consist. It is beyond question that if, as Professor Helmholtz teaches, the external world is known to us only by its symbols in consciousness, they, strictly speaking, are the only *phenomena* which the material universe presents to us ; and if science adheres to its professions, it must confine itself to them : if it recognizes the world behind them, it transcends the region of phenomena, and enters the region of Ontology. It is notorious that science does this. It proceeds unquestioningly on the supposition, that a boundless material world is spread around us, whose objects and changes are telegraphed, by the mechanism of perception, to the brain-centres where alone consciousness is supposed to reside.

The inconsistency is carried by Professor Helmholtz to a curious extreme. For it is by arguing on the supposition that he is dealing with external objects themselves, which are what they seem, that he reaches his conclusion that the outside world can be known to us only by non-resembling signs in the brain. But that conclusion is inconsistent with the supposition on which his proof proceeded. Yet he—and the scientific

world in general, it would seem—accept the conclusion that we can know only these non-resembling signs, but still act on the supposition that they can deal with external material objects. The insoluble problem of the relation of thought to the brain is among the difficulties born of this inconsistency. For when it is proved that we can know the world only by non-resembling signs, we are no longer justified in supposing that consciousness is related to our brains as before we were accustomed to think. We shall recognize that our brains, as presented to us in conscious symbols, do not, any more than other objects apprehended in symbol, resemble the objects themselves. The problem, in fact, has arisen from taking the symbols for the reality, when Professor Helmholtz shows that the two do not even resemble each other.

Science seems, then, to be placed in the following dilemma: if, according to its professions, it confines itself to phenomena, it deals only with feelings, and has nothing to do with the inaccessible world beyond them, the world of Ontology. If, on the contrary, it takes cognizance, as is always assumed, of the world which lies outside consciousness, it transcends phenomena, and deals with the real world behind them, which, on its own showing, cannot resemble the signs by which alone it is apprehended. There seems to be no alternative—if we accept the scientific account of perception—between confessing that science cannot transcend feelings, which amounts to Idealism, and asserting that it deals with the world behind phenomena, which is to constitute it an Ontology. The last supposition, it need hardly be said, is invariably chosen; but, by a strange inconsequence, its ontological character is not recognized. Scientific men refer with the

utmost freedom to objects which are presumed to lie outside consciousness, and speak of them without hesitation as material *phenomena*, and recoil from any dealings with the world of Ontology as from an inaccessible region of metaphysical abstractions. And this when the mechanism of perception, as they have explained it, forbids us to know anything of the external world except by sensations, which are confessed to be *non-resembling signs* of the objects they signify !

A protest must be made against this extraordinary inconsistency, and science must be challenged to choose the position she will hold, and to abide by it. If she elects to deal only with phenomena, with the *symbols in consciousness*, she must not be permitted to transcend them by language which refers to the objects symbolized; or, if she professes to treat of the outside facts themselves, she must abandon her boast of dealing with phenomena alone. The reply which scientific authorities would make to this criticism would doubtless be the admission, if pressed, that their facts are but symbols in consciousness, and not the things signified behind them ; but it would be urged that, for practical purposes, they must employ the familiar phraseology which speaks of external objects as themselves presented in phenomena.

§ 2. THE SCIENTIFIC ACCOUNT OF PERCEPTION INVOLVES IDEALISM.

It is obvious that Professor Helmholtz could not do otherwise than acknowledge that our sensations are the only actual phenomena in perception, and are the non-resembling signs of external objects which he has shown that they must be, and Professor Huxley has

more than once expressed himself with all explicitness to the same effect. He has written:—

‘The great fact insisted on by Des Cartes, that no likeness of external things is, or can be, transmitted to the mind by the sensory organs; but that between the external cause of a sensation and the sensation, there is interposed a mode of motion of nervous matter, of which the state of consciousness is no likeness, but a mere symbol, is of the profoundest importance. It is the physiological foundation of the relativity of knowledge, and a more or less complete Idealism is a necessary consequence of it.’¹

And again, in his lecture on Des Cartes, published in *Macmillan's Magazine* for May, 1870, Professor Huxley said:—

‘All our knowledge is a knowledge of states of consciousness. “Matter” and “Force” are, so far as we can know, mere names for certain forms of consciousness. . . . It is an indisputable truth that what we call the material world is only known to us under the forms of the ideal world; and as Des Cartes tells us, our knowledge of the soul is more intimate and certain than our knowledge of the body.’

In another paper, ‘On the Physical Basis of Life,’ Professor Huxley justifies the use of materialistic phraseology thus:—

‘In itself it is of little moment whether we express the phenomena of matter in terms of spirit; or the phenomena of spirit in terms of matter; matter may be regarded as a form of thought; thought may be regarded as a property of matter. Each statement has a certain relative truth. But with a view to the pro-

¹ “On the Hypothesis that Animals are Automata,” *The Fortnightly Review*, Nov., 1874, p. 560.

'gress of science, the materialistic terminology is in 'every way to be preferred.'¹

The propriety, not to say the necessity, of employing language which assumes that we are face to face with the material world, is not for a moment questioned here, as will shortly appear; the objection made is, that this way of speaking, confessedly inconsistent with the facts, as we have just seen, constantly carries with it, in the minds even of the instructed who use it, implications of its accuracy which, when pressed, they admit are not justified. Even the passage just quoted from Professor Huxley represents the two phraseologies which may be employed as pretty much on a par in respect of their truth, so that the superior utility of one should incline us decisively to adopt it. But the two theories do not stand in this relation to the facts with which they deal.

Though the language and ideas of the materialistic hypothesis have become indispensable to us, it is not an alternative theory, urging a rival claim against that which affirms that our external perceptions are at most non-resembling symbols in feeling of objects which are out of our reach. On the contrary, it is by following out the materialistic hypothesis that science has conducted us to the conclusion that objects can be known only by unlike signs. It is the inevitable issue of the materialistic hypothesis, strictly interpreted by science, that material objects can be known only by signs in feeling which do not resemble the objects. But as already pointed out, that conclusion disproves the supposition on which the materialistic hypothesis proceeds, the supposition that external objects are as we apprehend them to be. Nevertheless, these

¹ *Fortnightly Review*, Feb., 1869.

mutually conflicting theories, one the consequence of the other, yet disproving its truth, Professor Huxley describes as each having a certain relative truth. A *relative* truth, no doubt, may, must be ascribed to the materialistic hypothesis, for the world *appears* to us in accordance with it ; but its own consequences forbid us to ascribe to it any other than this most limited certainty. But on every hand a great deal more than this is ascribed to it. The facts of the external world, as we apprehend them, are spoken of as the most, if not the only certain facts which we can know ; they are designated as 'positive,' and regarded as indisputable and unalterable. And of course, it is only in virtue of their possessing this character, that they have any force at all against the aspects of man's higher nature, with which they doubtless come into collision ; but we now see that the materialistic hypothesis itself forbids us to ascribe such a character to its conclusions, for it proves that those conclusions are but facts of consciousness, if indicative of realities, yet no more than symbolic.

If we start from the psychological point of view, we encounter, of course, facts of consciousness alone ; and now it appears, from the scientific account of perception, that the materialistic assumption leads to the same result, which thus receives a double confirmation. And this being so, instead of the physical and psychological theories and terminologies being counter-suppositions, each having a certain relative truth, as Professor Huxley represents, we find that the physical assumption, when pushed to its issues, lands us also (if we recognize thought at all in connection with it) in an idealistic conclusion, and disproves the materialism on which it is based. It follows that the materialistic

hypothesis confutes itself as an account of things as they are; and that we cannot take its statements respecting matter as really valid, without violating its own conclusion that our perceptions are *non-resembling* signs of the external world. Yet this inconsistency is habitually practised on all hands without any hesitation—whenever the statements of physical science are opposed to assertions from the world of mind, the former are supposed to possess a far superior certainty, a ‘positive’ character altogether unquestionable, although physical science itself shows us that ‘all our knowledge is a knowledge of states of consciousness,’ and that a state of consciousness ‘is no likeness, but a mere symbol,’ of its supposed external cause.

§ 3. MATERIALISTIC PHRASEOLOGY FALSE YET
INDISPENSABLE.

It will be asked, What view, then, ought to be taken of the materialistic hypothesis, if, on the one hand, it is confessedly indispensable, and if, on the other, it confutes the claim made for it to represent things as they are? Is it not an absurd paradox to affirm that it is essentially untrue in the same sentence in which it is admitted that we cannot do without it? The paradox is entirely justified when we recollect the situation. We see the so-called external world solely from the one point of view of our own consciousness. Its infinitely diversified facts being invariably observed by us from thence, always wear to us the form and the colouring in which they appear from that point. But that form and colouring are demonstrably peculiar to that position, and not possessed by the world itself, except as apprehended by the Ego. That being so,

two conclusions are indubitable—the first, that for all practical purposes we must employ a terminology which describes the scene from the only point of view we ever occupy, and which, within those limits, always holds good ; the second, that this terminology cannot hold good of the world itself, and will land us in error if applied thereto,

Therefore, it is not only legitimate, but inevitable, to speak of external facts as they invariably appear to us, while yet they themselves teach us that they cannot be as they seem. It is this practical necessity, erroneously supposed to hold good without any limitations, which engenders the perplexities, some of which have been pointed out in the preceding pages. But if once we admit the propriety and necessity of the ordinary language for the point of view which we occupy at present, and further recognize that it has only a limited validity, the inconsistency of its statements with conclusions reached from another starting-point will no longer surprise or perplex us ; and we shall be aware that conclusions respecting external phenomena have no applicability to facts which are not phenomena. It seems at first sight a very illogical proceeding to continue to speak of material objects as if we actually perceived them, after science, by carrying out that supposition, has taught us that we can know only their non-resembling signs. The only proper course seems to be to abandon the supposition which science has disproved. But who could propose to abandon the Realism on which science, as well as the vulgar, proceed ? Professor Helmholtz, who is distinguished for his discoveries based on the materialistic hypothesis which he has disproved, never dreams of suggesting such a course. Then what view of the matter shall we

take? Shall we rest content with the representation of Professor Huxley, lately quoted—‘Each statement has a certain relative truth’—and accept the practical inference drawn by him in the following passage:—

‘If we find that the ascertainment of the order of nature is facilitated by using one terminology, or one set of symbols, rather than another, it is our clear duty to use the former; and no harm can accrue, so long as we bear in mind that we are dealing merely with terms and symbols.’¹

This course would be unobjectionable, as well as practically necessary, if only the last condition were observed; but the unhesitating way in which the conclusions of science are treated as valid always and everywhere, as well as from the limited point of view of the materialistic hypothesis, shows how recklessly the caution is disregarded. And though no doubt can arise as to the practical necessity of using the materialistic phraseology, it surely requires, and if it is thus necessary it must be capable of receiving, some better logical justification than Professor Huxley accords to it. ‘The two inconsistent terminologies are each true in their way,’ he informs us; ‘and we ought certainly to adopt the more useful, only bearing in mind that it is not essentially true.’ We have seen that a truer account of their relation would be—‘the materialistic hypothesis disproves itself, and lands us in Idealism; nevertheless, it is indispensable.’

Let us enquire how this paradox can maintain itself, how that can be indispensable which is demonstrably false? Professor Huxley’s legitimate plea for the

¹ “On the Physical Basis of Life,” *The Fortnightly Review* for February, 1869, p. 145.

employment of the materialistic terminology is, that the use of it facilitates 'the ascertainment of the order of nature.' A cogent reason, no doubt; but how is it possible that the 'order of nature' should be better ascertained by proceeding on a false supposition which disproves itself, than by adhering to the facts? Falsehood misleads, and entangles its adherents in confusion; but here a certain falseness of view is pronounced to be an indispensable aid to the understanding of nature.

In the first place, this falseness does entangle its adherents in confusion, as is seen in the many hopeless perplexities, into which we have found that the materialistic hypothesis conducts us. The impossibility of collating movements and thoughts, of finding any room for, or trace of, thoughts among movements, of our having any actual perception of external objects, these are among the insoluble difficulties which we encounter; and we may fairly believe that they are due, at least in part, to our proceeding on an assumption which proves its own falsity. Certain it is, that every departure from fact must, sooner or later, land those who make it in some contradictions. If such departures entailed no such Nemesis, it would be the greatest contradiction of all. This consideration gives additional emphasis to the question, 'How is it possible that the ascertainment of the order of nature should be facilitated by the use of an erroneous assumption respecting it?' The fact that it is helpful, and even necessary, seems to certify that it is the truest assumption we can make; and no doubt that opinion accounts for its conclusions being held as unquestionable, in spite of its own evidence to the contrary.

§ 4. RELATION OF MATERIALISM TO IDEALISM.

What, then, is the answer to the very obvious question, 'How can the materialistic phraseology facilitate 'our ascertainment of the order of nature except in so 'far as it conforms to it?' The expression, '*the order of nature*,' is used here in a double sense. In one case it means, 'the order of nature *as apprehended by us*,' the phenomena as they appear to our senses; in the other case it means, 'the order of nature *as it is*,' *apart from its apprehension by a mind*. Now we have seen, Professor Helmholtz has proved to us by scientific demonstration, that these two are quite different. *The order of nature as apprehended by us* is the aggregate of conscious signs which do *not resemble* the external objects they symbolize. *The order of nature apart from its apprehension by a mind* is the aggregate of things signified by those non-resembling signs. The materialistic phraseology is adapted to the order of nature *as apprehended by us*, and of course facilitates our ascertainment of that which is nature as seen from the only point of view from which we ever behold her. But on this very ground it fails to conform to the order of nature *as it is*, apart from its apprehension by mind; in other words, true respecting the signs, it is false respecting the things signified by them. Hence the paradox is entirely justified, that the materialistic hypothesis, though self-confuted, is indispensable to the study of physical *phenomena*. But the view we thus obtain of its relation to Idealism is very different from that which is suggested by Professor Huxley, when he says, as quoted above:—

'It is of little moment whether we express the 'phenomena of matter in terms of spirit, or the phe-

'nomena of spirit in terms of matter. . . . Each statement has a certain relative truth. But with a view to the progress of science, the materialistic terminology is in every way to be preferred.'¹

For instead of being rival and collateral theories, presenting claims on our acceptance pretty equally balanced, and the preference being decided by the superior utility of the materialistic hypothesis, that hypothesis, in spite of its practical necessity, is self-condemned as an account of things that *are*, and its validity is strictly confined to things as they *seem*, but *are not*. Moreover, when we resort to the other phraseology, and speak of all phenomena as conscious states, our assertion is a simple statement of what the *phenomena* are, and we do not predicate anything necessarily, respecting a world external (if such there be) which has caused them. In other words, the spiritualistic terminology describes the same facts as the materialistic, namely, the symbols in consciousness ; only it describes them as what they *are*, instead of as what they *seem*, but *cannot be*.

And here we are brought to the inconsistency which introduces confusion into the else admirable clearness of Professor Helmholtz' exposition of the mechanism of perception. For he tells us that these symbols in consciousness are called into being in the brain by the action of external objects on the extremities of the nerve ; but to say so is to place the material universe with which science deals *outside the symbols*, while we have just seen, Professor Helmholtz has himself taught us, that science can deal only with nature as apprehended by us, that is, with its *appearances* presented in symbol. It comes therefore to this :

¹ *Fortnightly Review* for February, 1869.

the signs are the only phenomena, but the materialistic hypothesis *treats the signs as being the things signified*. So does Professor Helmholtz himself, in all his discussions respecting physical phenomena. He does not keep reminding his readers that physical phenomena are non-resembling signs of the objects to which they correspond. *The signs are the objects* about which he argues—they are *treated as being* what Professor Helmholtz himself shows that they cannot be.

Now we have seen that the materialistic assumption is practically indispensable ; we must speak of external nature as it is invariably presented to us ; but clearly there is something wrong about representations which land us in this inconsistency. We cannot acknowledge that we know external objects only by non-resembling conscious signs, and at the same time speak as if we were face to face with the objects themselves. How can the inconsistency be avoided ? It arises out of the inaccurate assumption of Realism on which science proceeds, that we are face to face with external objects. In virtue of it, we treat certain conscious states as being what they are not. It is practically necessary to do so ; and no difficulty arises from thus treating them as outside us, where they seem, *so long as we keep up the assumption*, and do not mix with conscious states so regarded others not so regarded, but recognized as mental. But whenever we attempt to blend in a common representation, mental states viewed as such, with mental states assumed for the time to be other than such, then we are involved in confusion. And it is inevitable that we should be, for we have played fast and loose with our hypothesis in applying it to the facts before us ; we have used it in regard to some of

them, and dropped it in regard to others; and no homogeneous scheme can possibly result from such inconsistent procedure.

Now, we are guilty of this inconsistency whenever we represent conscious states as planted among the facts of the so-called material world; whenever, *i.e.*, we suppose thoughts and feelings to emerge within certain nerve-centres. For nerve-centres, *as known to us*, are, like all other material *appearances*, *conscious states treated as being external objects*, and while we make that illusory assumption respecting them, we are not at liberty to combine with them a conscious state, respecting which the same supposition is not made. Exactly this is done, however, when consciousness is said to have its seat on the brain; and what consequences does the error entail? In the first place, it lands us in the inconsistency we are noting; we prove that we can perceive only feelings in the brain, and yet we assume that we are dealing with a whole world of objects outside the brain, and which, therefore, must be unperceived. In the second place, when we look for traces in the brain of the curious product called consciousness, which its movements are supposed to secrete, we are entirely baffled in our search; not a vestige of feeling is discoverable there, nor is it easy to see how it could make itself known if it were there, for we are told that the changes of the brain are regulated entirely by physical causation. And, nevertheless, scientific men persist in assuming, in the absence of all physical evidence—it is the explicit doctrine of Professor Helmholtz—that consciousness arises in certain nerve-centres of the brain, and that the feelings gratuitously assumed to be fabricated there, in some unaccountable way, are the signs which give us our only

and confessedly inaccurate knowledge of the world outside, which yet we are supposed to know so well ! It will be remembered that this was the result reached before, in regard to the relation between thought and movement in the brain. Consciousness is unhesitatingly declared to arise in certain nerve-centres, although science finds, as we saw, neither trace of, nor room for it there ; and to escape from this dilemma, thought and movement are described as a twofold fact, to be counted as one, though presenting two faces. It was shown, among other proofs of the untenableness of this supposition, that since the faces are phenomena, and it is with phenomena that science deals, they must be counted as two ; and further, that science has no right to recognize facts of which it finds no physical trace. This accords with, and confirms, the conclusion now reached by a different road. The nerve-centres, like all other portions of the so-called external world, are, *as perceived by us*, conscious states treated as material objects ; and if, while treating them as material objects, we treat some of them as conscious states *as well*, we count them twice over, and so make a double set of facts where there is only one. The proper course is, to adhere to the materialistic assumption so long as we make it, and not suppose conscious states among its facts, where assuredly we shall never find them. The source of this misleading mistake is easy to understand. Since we have constantly to deal with conscious states as such, as well as with that class of them which we treat as external objects, we keep passing incessantly from the materialistic assumption to facts outside it, and so find it hard to get rid of the erroneous belief that it, and the mental facts outside it, belong to one homogeneous scheme—the

material world we behold, with minds lodged in combination with material bodies.

But at least the particular difficulties which have been pointed out disappear when we recognize that the external world, *as known to us* (whatever it be in itself), consists of conscious states treated as material objects, a supposition which disqualifies us from associating with them any conscious states not so regarded. For now we no longer expect to find thoughts and feelings arising in material frames; we are treating certain conscious phenomena as material, and all conscious states *regarded as such* stand upon a different level altogether. The world is a purely material world, the bodies in it are purely material structures. But, then, all this holds true only while we proceed on what is confessedly an inaccurate assumption, namely, that certain appearances are material, which, in the last analysis, are our own conscious states.

We can now see how Professor Helmholtz is landed in a thoroughly inconsistent position by the very completeness of his physical theory of perception. He proves that we can know the external world only by non-resembling mental signs existing in the brain, yet he continues to study this inaccessible world beyond the signs as if he were quite cognizant of its facts. If he be, it is facts of *Ontology* of which he is cognizant, for, on his own showing, only the mental signs are *phenomena*. And the truth is, that material science as thus expounded is an *Ontology*; and its investigators act in harmony with that impossible pretension (which yet they would be the first to disclaim) by ascribing to their conclusions a validity holding good against any counter-claims made on behalf of mind. The confusion of Professor Helmholtz' exposition is due to his recog-

nizing the signs as mental states *together with* physical phenomena, which are *mental states treated as material objects*. But as a physical investigator he does not find any mental states among the brain-centres; he finds the brain a purely material structure, wholly subject to physical causation; and he is bound by his science to treat it as he finds it. Let him do so, and he will no longer be perplexed by having to account for the presence of sensations he cannot discover, and for their ability to reveal a world which they do not resemble. Those hopeless perplexities arise from the impossible attempt to occupy at once the diverse points of view of the physiologist and the psychologist. Let him, however, drop the materialistic assumption of the physiologist, and recognize with the student of mind, that even material phenomena are mental, although irresistibly associated with the external power they suggest, and then again he will have before him a homogeneous set of facts. And now he can recognize that he has not been dealing with two classes of facts, but with *the same set of facts differently regarded*; whence it follows, that to combine the two schemes is to count the same facts twice over. Moreover, he is no longer hampered by the difficulty of pretending to deal with external facts which, on his own showing, can never be *phenomena*; for now, the mental facts with which he is face to face are recognized as being themselves the objects which he designates material.

§ 5. THE WORLD AS KNOWN, ESSENTIALLY IDEAL.

The admission which brings these reliefs is, however, none other than this, that the external world, *as perceived by us*, is essentially mental in character; and

that in treating it as material, we make an assumption which, however legitimate and indispensable within limits, is only a supposition made respecting certain appearances, which has to be dropped when we test their real character, or refer to facts which do not take the same form. Would scientific investigators reject this admission, and assert that material phenomena are the actual facts of the external world? But their own science disproves the possibility of that claim, when Professor Helmholtz, on the assumption that it is true, is driven to acknowledge that sensations are only in the brain, and can be but non-resembling signs of external objects, themselves for ever out of reach. Physical science, then, when it gives illicit recognition to facts of mind, is compelled to own that our knowledge of the world is a knowledge only of mental signs, which plainly disqualifies it from treating these, the only phenomena, as material objects. Yet it does treat the signs as material objects; for practical purposes it must, at all costs of consistency. What is this but to adopt tacitly the view contended for here, to treat the mental facts as themselves material, ignoring for the time their mental character? The assumption is quite legitimate, if recognized as such, and faithfully adhered to; but it is wholly illegitimate to plant thoughts and feelings among these material objects, which are admitted in strictness to be themselves thoughts and feelings. Professor Helmholtz is perfectly free to investigate physical phenomena on the assumption that they are the objects of the material world, but he cannot consistently superadd to them sensations which he never finds, and to admit which is to debar him from any apprehension of the material world. To do so is to

attempt to occupy another point of view without quitting the old one.

It is noticeable that even Sir W. Hamilton, the resolute advocate of our direct apprehension of the external world, makes admissions respecting the conditions necessary to this, which modern science, as interpreted by Professor Helmholtz, shows are not fulfilled. 'Consciousness,' he says in one place, 'is a knowledge solely of what is now and here present to the mind.'¹

And elsewhere, in harmony with this, he shows that if consciousness were only seated in the brain, our knowledge of the external world could only be indirect. And how insecure our conviction of its existence must be if based only on mediate, representative perception, his celebrated criticism upon Brown sufficiently shows. The following passage, read in the light of the modern conclusion that consciousness is seated only in the brain, lands him in the admission that direct knowledge of the external world is impossible.

'It is the condition of an intuitive perception, that a sensation is actually felt there, where it is felt to be. To suppose that a pain, for instance, in the toe, is felt really in the brain, is conformable only to a theory of representationism. For if the mind cannot be conscious of the secondary qualities, except at the centre of the nervous organism, it cannot be conscious of the primary, in their relation to its periphery, and this involves the admission, that it is incompetent to more than a subjective or ideal or representative cognition of external things.'²

While, however, it is clear, from the admissions both

¹ Notes on Reid, p. 810.

² *Ibid.*, p. 821.

of physicists like Helmholtz, and of psychologists like Hamilton, that, since consciousness is confined to the brain, all so-called material phenomena must be mental in character, it does not follow that there can be no recognition of anything external through them. They are mental effects which, from the sense of resistance to our efforts which they bring, and from their coming and going not being subject to our control, inevitably suggest to us that they are due to a power, not ourselves, which we call external; and naturally there grows up an inseparable association between this hypothetical power and the effects on us by which alone we apprehend it; so that we come to regard the effects as themselves external in contrast to other mental manifestations which suggest nothing external. There is 'an extradition of consciousness,' not only, as Professor Huxley says, to the periphery of the organism, but beyond it. But when we discriminate between the effects and the power supposed to cause them, we must acknowledge that the effects are subjective only, and the power external.

It is not strange that a phraseology which conforms to invariable appearances, like the materialistic, should seem as if it must be essentially truer than language which contradicts our human experience by affirming that we perceive only modifications of mind. But it is not impossible to see that the latter may be more deeply true, while yet the former holds good, and is indispensable, from the point of view which we occupy. Let us take a landscape painting by way of illustration. It presents, suppose, a scene of mountain, wood, and water. That is the picture, and those who behold it discuss it intelligently on the assumption that mountains and woods and water are before them. But some critic

might object that their language was essentially inaccurate, and therefore misleading, because the landscape they were discussing really consisted, not of land and water, but of paints arranged upon canvas. Of course he would be right, if inquisition were being made as to the actual composition of the objects in question ; but the assumption on which beholders were discussing the picture would be perfectly fitting, and indispensable to any apprehension of the picture as such, although confessedly a departure from facts. And if the critic were to try to substitute stones and twigs and real water for the paints, these, though consisting of the same materials as the objects represented, would not set forth the scene half so well as the *non-resembling* paints, treated as being what they *seem*, but *are not*.

And the greatest absurdity of all would be, to drop the assumption now and again, while still professing to adhere to it, to speak of bits of paint lying on the mountains, or floating on the water. That would be to treat the paints and the landscape as parts of one homogeneous scheme, instead of as two, wholly incommensurable with each other ; and, moreover, since one could not suppose holes in the mountains, or water, filled up with paint, but should take the paint to lie *on* the mountains, and *on* the water, it would be equivalent to counting the same facts twice over at those points, once as mountain or water, and once as paint. Of course it would baffle ingenuity for ever to account for these superfluous and isolated bits of paint, nor would it be a true solution of the difficulty to call the paint and mountain, or paint and water, at these points, two aspects of a single reality. The difficulty respecting perception, and the relation of thoughts to the

brain, seems to be precisely of this character. And suppose that, instead of having before us a small painting surrounded by other objects, the painting was as wide as the limits of vision, and we could never see anything else, the parallel, so far as sight is concerned, would be much closer. In such circumstances, it would be perfectly fitting, indispensable for the purpose in view, to proceed on an assumption known to be false. But only confusion would arise from attempts to combine this assumption with the known fact. And that representation of the relation between movements and thoughts which finds favour at present, the doctrine that they are two-fold aspects of a single reality, although it avoids some difficulties, is, if this illustration holds, an essentially inaccurate account of the matter. Already it has been urged that this supposition is untenable, especially on the ground that the two faces in question are certainly *phenomena*; and if so, they must count as two *among phenomena*, with which alone science concerns itself; consequently, the single fact in which they are said to unite must be a fact of Ontology, and beyond the purview of science. That seems to be the view of Mr. Herbert Spencer, who speaks of 'the ultimate reality in which subject and object are united;' but it fails to meet the problem, because it leaves us with two sets of *phenomena*, where we find only one. If we are to have only one set of *phenomena*, it must be by admitting that one of the two faces is itself the reality, and that the other face is an illusory assumption made respecting the reality. If so, we cannot proceed on the illusory assumption *at the same time* that we are recognizing the reality, for the two are incompatible. One is the other differently regarded. One is true, and the other false. One is

the paint, and the other the painting. That is to say, we cannot deal with movements *at the same time* that we deal with thoughts. For movements, as perceived by us, are thoughts differently regarded. To speak of thoughts is to speak truly. To speak of movements is to speak in accordance with an illusory appearance. This is to assume, what can hardly be denied, that if the two come into competition, the one as real, and the other as an illusory assumption respecting it, it is states of consciousness which are real, and answer to the paint, and the material world as perceived which answers to the illusory but indispensable assumption of the landscape. But this is not at all the view taken by those who speak of the two-fold aspect—objective and subjective—which the world assumes to us. They attribute equal validity to both, treat both as being what they seem to us; and Professor Clifford carries out the supposition with such admirable consistency that he attributes to every movement whatsoever some rudimentary accompaniment of feeling. This is, of course, to recognize both at once, and to deal with the two incompatible series of appearances as conjoined and co-ordinate realities, to give them an ontological character. And all this in utter forgetfulness of the conclusions of Realism, that consciousness is confined to the brain, and furnishes only *non-resembling signs* of external objects.

It is maintained, then, that Realism, when carried to its issues by science, conducts us to the very conclusion on which Idealism is based, that the objects of external perception seem to us what we have the means of knowing they are not, like the objects of a landscape painting. It follows, that we are face to face with the objects we perceive; we do not know them, as science

teaches, by images which represent them ; but we apprehend them directly, presentatively. And from the character of these representations, changing as our position changes, and so associated as to be identified with the external power to which we must ascribe them, we frame our conception of the material world around us, a conception perfectly legitimate and reliable whenever these phenomena present themselves.

But other facts of consciousness have no such associations with external power, consequently they are not projected outwards, nor assumed to be external ; they are on quite another platform, and cannot be recognized in combination with so-called external things. Nevertheless, since we have to pass incessantly from the one class to the other and back again, we are practically obliged to recognize both, although, strictly speaking, they are incompatible and incommensurable with each other.

Now, it is this practical necessity of freely and constantly recognizing facts which, strictly regarded, are incommensurable, which introduces into our conceptions of the universe many baffling inconsistencies. Such a want of harmony in our conceptions could not fail to land us in perplexities. And we encounter them continually, as we have seen. We try, *e.g.*, to discover thoughts in the nervous movements of the brain ; but of course they cannot be accounted for, or discovered anywhere, when we are treating *certain of our own mental appearances* as a nervous organism external to ourselves. We thereby assume it to be something outside us, something real, ontological. Yet we must often speak of movements and thoughts as if they were co-ordinate realities.

The same explanation must be given of the long-standing controversy between necessity and freewill. From the standpoint of the materialistic hypothesis, physical causation is supreme, and human actions, like all others, are subject to it. In this sense it is true, as Professor Huxley says, that 'the realm of matter is 'co-extensive with knowledge, with feeling, and with 'action.' And 'if the external world were what it seems, man would be a pure automaton, the helpless and irresponsible slave of mechanical laws. Such many of the authorities of physical science proclaim him to be. But they do so by ascribing an ontological value to the facts and conclusions of their science, to do which is to violate their proper boast that they deal only with *phenomena* as distinguished from *realities*, and to abandon the stand-point which their own science compels them to adopt, since the mechanism of perception, as they explain it, shows that if the external world were really as it seems, we could not perceive it, but only mental signs that could not resemble it.

But let it be freely granted that material phenomena consist of our perceptions (which yet may well be signs to us of external power), and that conclusions respecting these phenomena hold good of them only, and cannot be trusted when applied to realities beyond them, and then this incredible reduction of man to a mere machine will impose upon us no longer. And we escape from it not by vain attempts to show that the brain of man is not subject to the laws which prevail elsewhere in the material world to which it strictly belongs, but by recognizing a conclusion to which science itself conducts us; namely, that material *phenomena* are not even *like* the realities which, nevertheless, they may

indicate ; and therefore that it is quite illegitimate to extend to the *realities* laws which yet hold perfectly good of the *phenomena*.

Now, when we ask whether man is indeed a mere machine, we raise a question as to what he *really is*, and not as to what, from a particular and confessedly one-sided position, his nature *seems*. These two enquiries are quite distinct, and it may well be that the answers to them are different. The controversy respecting human freedom has arisen from taking the answer to the second question as equally the answer to the first.

Students of man's physical nature urge with convincing force that that nature is as strictly subject to the law of causation as any other part of the world revealed by the senses. On the other hand, nothing can eradicate our conviction that a man's actions are largely determined by his mental resolves ; and hence endless controversy is waged. The truth seems to be that here, as so often elsewhere, both the disputants are right, and both are wrong. Man, as a part of the world perceived, is wholly subject to its laws. But it is demonstrable that the world as perceived does not even resemble the world which *is*. Hence to apply to the latter conclusions borrowed from the former, is to carry them beyond the limits within which alone they hold. We have no reason at all for saying that the reality, whatever it be, which manifests itself to us in our consciousness, is bound by the laws which a certain special class of our mental manifestations observe. The fact that society would be impossible if men were not dealt with as more or less responsible for their conduct, goes far to establish by positive evidence that exemption of mind from the laws of material *phenomena* to which the negative evi-

dence points. But, for the reasons stated above, the two conclusions, when properly understood, do not really come into collision. For one relates to appearances demonstrably illusory, and to them only. The other relates to inaccessible realities. Each, then, may occupy its proper ground in peaceful recognition of the other.

But if, comparing these inconsistent statements,—one, that man is wholly subject to physical law; the other, that he possesses enough of spontaneity to make him in measure responsible for his conduct;—we ask in what sense each is true, and which expresses the deeper truth, the reply is this:—It is as belonging to the material system that man is called the slave of physical law. In that system, which takes cognizance only of his physical organism, spirit and spontaneity have no place at all. But the materialistic hypothesis, indispensable though it be, demonstrably holds good only from a particular standpoint. It is what *seems*, and it is not what *is*. So limited, so illusory, is the necessity to which man is condemned by it.

But though freedom and responsibility find no place in the materialistic hypothesis, they have forced their way to recognition in spite of it. The nature of mind, indeed, is not sufficiently understood to enable us to give a true theory of their character and limits; but if they have place at all, it is as appertaining to the real nature of mind. And mind must be stripped of its highest and most distinctive characters, if they have no place. The circumstance that there is no room for them in the illusory material system is at any rate no valid argument against them. Rather, if freedom and responsibility belonged to man's material organism only, they would be as illusory as material phenomena are;

but since they belong to facts of his nature, which lie outside material phenomena and have at least a more essential character, they are true of the reality which underlies appearances, if they are true at all.

We may say the same respecting the presence and operation of intelligence in the works of nature and of man. Indeed, the problem of freedom and necessity is at bottom the same as the problem of design. It has been shown already that no distinction can be drawn between the works of man and the changes of nature in regard to the directing power of intelligence. Judged by the laws of the material system, it is just as impossible that purpose should govern human actions as that design should rule in nature. All the facts of the material system are subject to physical causation, and it is, of course, quite inadmissible to predicate intelligence of human works, when its operations are denied in nature. It must be refused to both, or recognized in both. Yet we can neither find it, nor reject it.

This is exactly what must happen on the view which we are taking. In the material system, there is no place for a single fact of mind, and of course none for its directing activity, either in nature, or in man who is a part of nature. But that system is an illusory assumption respecting a particular class of facts. Whenever we transcend them, as constantly we must, we are no longer bound by the conditions of the assumption. We are face to face with mind, of which intelligence and purpose are distinctive characters. And thus the disputants on the much-vexed question of design have both been right, and both been wrong. They have supposed that they disagreed on the same point; whereas really their different conclusions related to different points, leaving the two conclusions not

inconsistent with each other. Of material *phenomena* it is perfectly true that directing intelligence never interposes to rupture the continuity, or turn the current, of the physical causation which regulates their successions. And human organisms belong, in the strictest sense, to material phenomena. But the *phenomena*, of which this holds good, when examined, demonstrate their own *non-reality*. They and their laws have, however, been treated as real, both by the upholders and opponents of design. Those who so treat them are landed inevitably in the conclusion that all human, as well as all natural, operations whatsoever are effected by mechanical laws, and are never modified by purpose or by feeling; so that if men had been destitute of minds, the actions of every individual, and the course of human history, would have been exactly what they have been.

But while this is the only legitimate view to take of material phenomena, and of man as a material organism, it ignores every form of intelligence and consciousness, which, leaving no physical trace, cannot have any physical recognition. The investigators of external nature have freely recognised this there, and banished all intelligence from that wide domain; they must be challenged to apply the same treatment to the human frame, which, as they rightly teach, belongs strictly to the material system. They must confess that,—*from the point of view of their science*,—neither intelligence nor consciousness are there; to acknowledge which is, of course, to admit the limited range of their science, and the non-reality of the materialistic assumption. If they shrink from this admission, and maintain that intelligence rules in certain animal organisms, they cannot deny its operation in the works of nature, which are exactly on the same footing as regards physical

evidence of its presence. But this would be to proceed against evidence. The proper course is to follow it to its furthest consequences, and admit that the materialistic assumption excludes all facts of mind and thereby indicates its merely hypothetical character. Its special manifestations resolve themselves, when analysed, into the varied effects on us of external power, in constant action and reaction on the power which the Ego exerts.

§ 6. REALISM AND MONISM INCONSISTENT.

It is supposed by many at present that Realism may be upheld by means of a doctrine of Monism, which identifies the two classes of facts called subjective and objective, and describes them as two aspects of a single series of processes. But all depends on how this ambiguous doctrine is understood. If it be meant that nerve-movements and thoughts *are* what they *seem to us*, that they are coexisting and coordinate sets of facts, the complete distinction of *aspect* which exists between them is affirmed to be *real*, and not merely phenomenal; and we are left burdened with all the difficulties of combining, accounting for, and even discovering the two series; for, as we have seen, there is room for but one, and the two are never met with together. Such a view is essentially dualistic, for the two aspects are *real*, whatever mystic unity be ascribed to them beyond the range of observation. Certain it is that the students of physical science hold the material universe to be real, and further regard the objective series of phenomena as governing the succession of their subjective concomitants; to hold which is to attain the necessary Monism by merging consciousness in material changes, among which it is impossible to suppose it

should arise, and where it is never to be found. Nevertheless, the material universe has, of course, this relative reality, that we can rely upon the regularity of its phenomena.

But the view just mentioned ascribes to it a further reality than that, which is inconsistent with any doctrine of Monism except one, which should leave Materialism the single and supreme reality. This, which excludes the operations of intelligence even from human works, and renders the emergence of mental states inexplicable, impossible, is what Monism, as generally held, amounts to, though the doctrine is supposed to give relief from these difficulties by merging the two aspects in a reality which allows room for the peculiar operations of both. But this can be only if we recognise the merely phenomenal character of the appearances of external nature, and to do so is to abandon the reality of Materialism, and the supremacy of its laws. If, then, the doctrine of Monism is to give us any relief from the difficulties which have led to its adoption, it can only be by recognizing that the monistic reality is something other than Materialism, which, consequently, is merely phenomenal. The power which unquestionably we have of working towards and realizing the mental purposes we form beforehand, renders it essential that the reality, whatever it be, should accord with, and account for, this prominent characteristic of our experience, which Materialism, treated as real, entirely fails to do.

Therefore Monism fails as a supposition which reconciles in an underlying unity the reality of the two aspects which phenomena present. If we take the distinction between subjective and objective to be real, we affirm a dualistic scheme, in which matter and mind

coexist. To suppose an additional reality, underlying and uniting the two, is entirely superfluous and unjustifiable, if we ascribe reality to the two sets of phenomena. There cannot be two different reals, one double, the other single. A reality relative to us, of course mind and matter have, but that is compatible with, nay it implies, their non-reality except as phenomena, to admit which is to abandon the reality of Materialism.

Monism might be conceived of as giving relief from the perplexing dualism of matter and mind in one of three ways. Matter might be the monistic reality, and mental states illusive appearances consisting of matter. Or mental states might be the monistic reality, and matter an illusive appearance composed of them. Or lastly, matter and mental states might both be mere phenomena, presented by a monistic reality different from either. But we must choose between these three suppositions. We cannot have three, or two, different and inconsistent ontologies. It has been abundantly shown that matter cannot be the sole reality, whose function of movement occasionally assumes the illusive appearance of feeling. Qualities quite hyper-physical, and such as the physicist never discovers in matter, must be ascribed to it before that could be assumed. On the contrary, the matter we perceive is reducible, in the last resort, to an aggregate of mental states regarded as external and real, and it is quite in keeping with the character of mental states that they should present these alien appearances. Those states themselves, however, are fugitive, and irresistibly suggest that they are but manifestations or effects of an abiding cause or causes not presented. They may be, nay, they are, real as

feelings, whose *esse* is *percipi*, and in this respect they differ from matter, which is erroneously regarded as being something else than what is perceived. But mental states point to an abiding reality or cause producing them, which amounts to the third view of Monism given above, as a reality different both from matter and from mental states.

And even if Realism and Monism were not on these grounds inconsistent with each other, the scientific account of perception, as explained by Professor Helmholtz, reveals their incompatibility. For the only form of Monism which could accord with Realism would be that which counts matter as monistic reality, a supposition untenable on many grounds, as we have seen, but especially inconsistent with the account of perception to which Realism itself conducts us. For since it brings us to the conclusion that our perceptions of the material world are but mental signs, which do not resemble the external objects which they signify, it is impossible to maintain any longer that we can perceive the material world itself.

In a word, science, in interpreting Realism, disproves its reality, disproves that form of Monism which proclaims matter to be real, and demonstrates its phenomenal character. The material world with which Realism, and science its interpreter, supposes that it deals is, on its own showing, the inaccessible world of Ontology. The material phenomena which confront us are mental states. Although, however, strictly speaking, we can perceive at most only mental signs of external objects, Realism treats and must treat, these signs as the objects themselves. And it has been suggested that what gives to us the irresistible conviction of the externality of these mental signs, is their constant association

with resistance to our efforts, and the fact that their presence or absence is beyond our control,—which lead us to identify them as effects with the external power, their cause, that the Ego seems to encounter on every side.

§ 7. REALISM AND POSITIVISM INCOMPATIBLE.

But the point now to be insisted on is that—not metaphysical arguments—but science interpreting Realism, compels us to admit that our external perceptions have, to a certain extent, an illusory character. The world which we perceive is, as we have seen, like a landscape painting, which it is useful and needful to treat as being something other than we know it to be. It is a mental picture, which, probably because it is produced by external power, we project outside us, and objectify as real. And no harm accrues, no inconsistency reveals itself, so long as we adhere to our assumption. But insuperable difficulties arise at once when we attempt to combine with this hypothetical scene mental states, respecting which the assumption of externality is not made.

And just as, in the case of a landscape-painting, the *very same facts* may be viewed, either as features of the landscape, or as fragments of paint, but would be counted twice over if they were regarded as both ; so it is with the mental scene. There also it is indispensable to draw a distinction between the features which make up the picture, its pictorial contents, one might say, and their essential constitution ; to express it in two words, between the *painting* and the *paint*.

It is maintained, then, that the material world as perceived corresponds to the *painting* ; but that when we enquire into the nature of what we perceive, we

find it made up of mental states, which answer to the *paint*. To that conclusion we are brought by physical science, as well as by psychology. To hold it, however, is not necessarily to hold that there is nothing external to ourselves which manifests itself in our perceptions. That depends on whether we confine ourselves to phenomena, or recognize them as the signs or effects of a power or powers behind them.

If, with a modern school, we hold that we cannot legitimately transcend phenomena, and therefore regard them as the only realities for us, then, indeed, we are shut up to Idealism. For we recognize only what demonstrably are mental states, which, by a curious obliviousness of their ideal nature, are called *positive* facts; as if the lack of all that is positive in their character could be made up for by giving them that name. Positive, no doubt, they are, in the limited sense that we can securely rely upon their uniformities of recurrence; but by this imposing name they get credited with a far more substantial character, are regarded as external realities, as the only realities, although they are known to us only as mental states, and the hypothesis forbids us to recognize in them aught except what they appear. The question may be raised, indeed, as to what the Positivist understands external phenomena to be. They *appear* to be external, and he has regarded them as such, brushing aside metaphysical scepticism.

But we have seen that physical science, if it takes cognizance of mental facts at all, conducts inevitably to the same conclusion, that all phenomena are conscious states. What, then, will the Positivist say in presence of this conclusion respecting external phenomena? Will he still treat them as being what they

appear to be, *external*, or as being what physical science and psychology alike declare that they are—*mental states*? If he takes them to be the outside realities they seem, he affirms an Ontology, than which nothing can be more inconsistent with Positivist professions. If he recognizes their mental character, his principles forbid him to go further, and he is landed in Idealism. Assuming him to adopt this latter supposition, he ascribes inconsistent characters to external perceptions when he calls them both phenomenal and positive. As phenomena, they are fugitive mental states, and Positivism holds all further inferences respecting their nature to be inadmissible.

But the word Positive carries with it a great deal more. In regard to the objects of perception, it signifies their external reality, to ascribe which to mental appearances is to give them an ontological character. Not a little of the attraction of Positivism lies in the notion that it recognizes known realities, and nothing beside. But if the word reality bears its ordinary meaning, this notion is quite inconsistent with Positivism; for the reality ordinarily ascribed to objects of perception is external existence. While, if the word reality be explained to mean here only mental states on whose regularities of recurrence we can rely, that is Idealism in its extreme form. Therefore the epithets phenomenal and positive are inconsistent with each other, and inapplicable to the same facts.

§ 8. THE INCONSISTENCIES OF POSITIVISM.

In ascribing reality to phenomena, the Positivist intends to distinguish them from facts and objects, not among phenomena, but inferred by reason to exist, as

the result of the study of phenomena ; deemed needful in order to account for them. Beyond question, reason suggests, if she does not compel, the belief that the stream of phenomena, subjective and objective, of which alone we are directly conscious, is not everything, is not self-sufficient, but supposes facts outside them, powers, processes, existences, or what not, never themselves revealed, but more or less knowable indirectly through the medium of phenomena. It is in contradiction to such unwarrantable conjectures, as they are deemed, that the school in question ascribes a *positive* character to phenomena alone. The world we have do to with, it is urged, is composed of them, and of them only. Whatever their nature be, we can depend on them with practical certainty. We had better, therefore, confine ourselves to them. That which lies beyond them, if anything does, is for ever unknowable by us ; and being outside the range of our apprehensions, had best be left out of our thoughts. The drift of the preceding reasoning is towards an opposite conclusion. It goes to show that phenomena, taken, as Realism takes them, to be what they seem, are not *consistent*, and proclaim, by the inconsistencies in which they land us, their limited, one-sided, and unreal character. We have seen, in fact, that the objective and subjective series of phenomena cannot be reconciled as coexisting portions of a homogeneous scheme ; that so-called external objects are, in reality, subjective states respecting which a particular supposition is made which is inconsistent with their true subjective character, and so incapable of being blended with it. Positivism, on the contrary, makes subjective phenomena products of objective changes, if it does not merge them in these last. This supposition is at

variance with conclusions to which physical science inevitably leads.

Moreover, the objective character which Positivism ascribes without hesitation to external phenomena is, we may see from the position we have now reached, in curious inconsistency with its own distinctive principles. For it has appeared that if physical science recognises mental states at all it is compelled to own, as Professor Helmholtz shows, that we are face to face in consciousness with them alone, which he calls *signs* of external things, but which, we have seen, must be for us the objects themselves. And we have seen that we are led to ascribe this objective character to certain of our mental states, because we associate them, as effects, with the cause, or causes, beyond our control, and therefore outside ourselves, which we regard as producing these effects, which themselves are beyond our control. And it is this recognition of external power, itself incapable of apprehension, but manifested through its effects on us, which alone invests those effects with their external character, so frankly recognized by Positivism. If this be so, obviously Positivism does herein admit the validity of an inference from phenomena respecting facts which lie beyond phenomena. For it recognizes the world as external only because it recognizes a power external to ourselves, and not itself belonging to phenomena, but revealed through them. Therefore, by acknowledging the world as external, Positivism abandons its profession of dealing with phenomena alone. If, on the contrary, it adheres to this profession, it is shut up to Idealism.

It has been shown, also, that to recognize physical energy, changing in its manifestations, but indestructible in amount—a conception which seems indispensable to

modern science—is to transcend phenomena (among which energy itself does not appear), and infer from them the existence of something to account for them, the existence of an efficient cause. Unless Positivists are prepared to disclaim energy, and the fruitful results to which the doctrine of its conservation has led, they must cease to avow that they recognize phenomena and physical causes alone. Nor are these the only cases in which they violate their distinctive principle. It has been pointed out that we have no conclusive evidence in present phenomena, objective or subjective, of a series of past phenomena, nor, indeed, can we explain, on the realistic conception of time, the possibility of memory. Our belief in its trustworthiness is indefensible, if we confine ourselves to phenomena; and with it must be classed our assurance of the permanence of the Ego, which can find no justification, and is wholly unintelligible, and ought to be abandoned, if we refuse to transcend phenomena. Mr. Mill, it has been seen, recognizes the inability of his philosophy to give any account of these prominent and distinctive factors in our life,—memory and the Ego. To recognize phenomena alone, is to be disqualified, we saw, from admitting the existence even of a series of phenomena, for a *series* supposes *past* phenomena, and so assumes the trustworthiness of memory. Only the *phenomenon now present* can pass muster then with those who consistently deny the validity of all the inferences and deliverances of consciousness respecting facts not present as phenomena. This is, of course, to exclude the possibility of reasoning, which proceeds from judgment to judgment, relying upon memory at every step. And we must exclude, likewise, if we refuse to transcend phenomena, all that elaborate grouping of thoughts,

that combination of their varieties into a unity in consciousness, which is a distinctive feature of our mental life, and characterizes especially its higher activities. In a word, those who limit themselves to phenomena, ought, in consistency, to disown the external universe and everybody in it, and the physical energy by which it operates on us, to refuse to admit the veracity of memory—and with it to reject the great past of the world, and their own previous life, all permanence in the Ego,—everything except the now present phenomenon of feeling. With that pitiful residuum alone they are left who, in order to reach it, make use of the rich accumulations of human knowledge obtained in the past, and are forward in boasting of the triumphs of man's intellect, and of the vastness and variety of the Kosmos which, as they teach, reaches in him its culminating point. They will go no farther, because, as they contend, the phenomena take us only so far. But in truth phenomena do no such thing : on the contrary, all this is inadmissible, all science and human life would be impossible unless we accepted the deliverances of consciousness when it carried us beyond phenomena. A present feeling is the only phenomenon ; to recognize aught beyond it we must accept the verdict of consciousness when it testifies to the past, and to our own life in the past ; and to recognize the world, we must believe consciousness when it proclaims the existence of power external to ourselves, and of other minds like our own. To do so, however, is to transcend phenomena at every step, to admit the validity of one, and another, and another inference or intuition of consciousness (the name is of minor importance), affirming the existence of what is beyond phenomena, as indispensable in order to account for them, and to enable us to act our parts.

It is unquestionable, then, that the testimony of consciousness to much that lies beyond the present phenomenon is accepted without hesitation, that human life would be at a standstill if credit was not continually given to inferences from the symbols which present themselves in consciousness. To read off the meaning of these symbols is the very function of our intelligence ; reason finds its occupation in the interpretation of signs ; and that is preeminently its office in the arduous and elaborate investigations of science. To recognize the world as external, is to assume a power outside me working effects on me ; to affirm that a phenomenon had an antecedent, is to accept the testimony of memory to a fact which is incapable of proof. Science, then, transcends phenomena at every step ; the whole fabric of human knowledge would collapse unless the testimony of consciousness was accepted to facts not found among phenomena, but inferred from them. Yet those who are indebted at every turn to such inferences, boast of giving recognition to phenomena alone ! Nor is it merely a practical, as distinguished from a philosophical recognition which is given to such inferences, for the entire edifice of their science reposes on them. Still, in spite of this unquestionable, self-evident fact, phenomena alone are affirmed to be positive, and that is said to be the only true philosophy which confines itself to them ! It is obvious, on the contrary, that the question is not whether the testimony of consciousness is ever to be accepted in regard to what lies beyond phenomena, for it cannot be wholly rejected ; but the very different question to be decided is this,—What conclusions of consciousness bearing this character may claim to be accepted ? We arrive, therefore, at the important conclusion that such inferences cannot

be rejected *in limine*, on the mere ground that they are not among phenomena; but that each claimant for recognition must stand or fall on its own evidence.

The world regarded as external was compared above to a painting regarded as a landscape. For a resemblance exists between them to this extent, that the phenomena in each case are treated as being what we have evidence that they are not; and for practical purposes it is needful and safe to proceed on the illusory supposition. Now we have seen that it is not only metaphysical arguments which land us in the conclusion that we are face to face with mental states alone, but that Dualism, ascribing coordinate reality to matter and mind, when rigorously interpreted by science, conducts us to the same conclusion. Physical science, indeed, does not find any traces of mind, and ought, therefore, it has been urged, to disown all mental phenomena, and proceed on a purely materialistic Monism; but to that pitch of logical consistency its adherents have not risen, involving, as it does, a *reductio ad absurdum* of the realistic pretensions of Materialism. They prefer Dualism, which, as Professor Helmholtz's investigations on perception show, lands us in the conclusion that external phenomena consist simply of mental states. Dualism, in fact, lands us in idealistic Monism; for to maintain that the mental states are non-resembling symbols of material objects, is to place matter in a world of Ontology, with which science has nothing to do. We have no right or reason to place in that unknowable world characters which we ascribe to matter as a *phenomenon*; though we may suppose that the effects which we characterize as objective are due to external power,—power being a name for the unknown something, whatever it be,

which is capable of producing them. If that inference be rejected, we are shut up to Idealism; or rather, since, in consistency, other inferences also, *e.g.*, those involved in memory, must be rejected, all reasoning and knowledge are rendered impossible. It follows that if, and only if, we accept the testimony of consciousness to a power outside us, revealed in its effects on us, can we recognize anything external. That power cannot, indeed, be supposed to wear the form of its effects on us, and we are unable to conjecture what form it wears. *Practically*, too, we must identify the effects with the cause;—treat the mental effects as external like the causes with which they are invariably associated. *Philosophically*, we distinguish between the two; and in recognizing the externality of the cause, accept an inference concerning what lies outside phenomena. And this inference alone saves us from the extreme form of Idealism.

If this acknowledgment of power as external be rejected, because it requires us to recognize something which transcends phenomena, certainly the externality of the phenomena themselves must be rejected too; for to admit *that*, is to ascribe a more than phenomenal, a real, material, external, character to the contents of a mental picture, and this when science itself proclaims that the picture is purely mental. To assert the external reality of mere phenomena, in the teeth of scientific evidence to the contrary, and at the same time to reject the inference of an external power working the effects on us—which accords with scientific evidence—because to do so would be to transcend phenomena, is preposterous inconsistency; but it is the inconsistency of modern Positivism.

§ 9. INFERENCES NECESSARILY SUGGESTED BY
PHENOMENA.

On the contrary, it will be observed that the view urged here—that our external perceptions, though themselves mental effects, indicate the external power or powers which cause them—conforms to the scientific account of perception given by Professor Helmholtz, in which he shows that the phenomena of consciousness can be no more than non-resembling signs of external things; the only difference between his view and that given here being this—that he, strangely, takes the external objects we perceive to be the things signified; while here, the objects we perceive are taken to be mental signs, and that which they signify is called power, its nature being wholly unknown. It is obviously inconsistent with Professor Helmholtz' account of perception to say that we perceive the external objects which are signified by their mental symbols; but he, and all who hold his generally accepted view of perception, are in this difficulty: if they admit that we perceive *only the mental signs*, they are landed—if they adhere to the scientific creed of recognizing only phenomena—in extreme Idealism; while if they go further, and recognize the external and inaccessible causes which produce these effects, they accept the testimony of consciousness to that which transcends phenomena, which is contrary to the professions of science; and the more so, because this external something, working effects in consciousness, must be an *efficient* cause, or causes, inasmuch as the *physical* causes of these same effects will be their mental antecedents among *phenomena*. The way out of this difficulty is for science—while freely treating as external

material objects those (strictly speaking *mental*) phenomena which we call the outside world—to acknowledge that this is merely a convenient and provisional hypothesis; and that, so far from its being possible (with Realism) to recognize phenomena alone, we can only recognize any as external by accepting the inference of power, or a series as internal by accepting the inference of the past, both of which carry us beyond phenomena. But this is to confess that Materialism, which identifies certain mental phenomena with their external causes, is merely a hypothesis, reliable within narrow limits. If, with Hume and Mill, we regard power as a 'purely subjective notion'; that is, if we deny the validity of the mind's inference that it exists, we are shut up to Idealism; and other inferences too must, in consistency, be rejected; *e.g.*, the trustworthiness of memory, for the past must, on the same grounds, be regarded as a purely subjective notion; and then all reasoning is at an end.

If this view of phenomena and of power be correct, if phenomena are strictly mental, and physical causes are antecedent phenomena, and it is necessary, therefore, to transcend phenomena, and recognize *efficient* cause or power in order to escape Idealism, and arrive at anything external; all this has an important bearing on Positivism, and on the celebrated generalization of Comte in regard to the development of philosophy. For his theory is that the theological or personal method of accounting for the changes of nature, after giving place to the metaphysical, in which occult principles and forces were regarded as the determining agencies, passed, or tends to pass, into the true and final view, which recognizes the successions of phenomena alone, and rejects the supposition of anything

behind them. According to the considerations just urged, this conclusion debars us from admitting anything external to our mental states, and lands us in extreme Idealism, instead of in the Materialism which Positivism favours.

And comparing the Positivist doctrine of purely physical causation with the two other theories—or let us say with the first, as being the more philosophical—it is clear that they do not, or need not, come into collision at all, and can do so only when they are misapprehended. For one may freely recognize external power, which is efficient causation, and ascribe it, directly or indirectly, to God, while contending as strongly as any follower of Comte for the unbroken continuity of succession among phenomena, which is styled physical causation. This last relates to the order in which *appearances* take place, which, so far as we know, is never interfered with by the visible interpositions of power, divine or human; the former relates to efficient, determining causation, which, supposing it to exist, would not present itself among phenomena, nor be at all incompatible with uniformities of physical sequence. We may reject it; and if we do, we deny that external phenomena testify to aught beyond themselves, which are mental, and that is the position of extreme Idealism. But if we admit this external power, we may hold none the less rigorously the doctrine of unbroken physical causation.

If this be so, the theory of Comte proceeds on an erroneous assumption in treating the phenomenal view of the changes of nature as a rival mode of accounting for the facts which the theological and metaphysical methods profess to explain. On the contrary, the truth seems to be, that the phenomenal, miscalled the

positive view, is simply a description of the facts, without any suggestion which accounts for them ; while the theological and metaphysical theories do profess, whether truly or not, to be explanations. No doubt, the powers which they assume were supposed until lately, are by many supposed still, to intervene among phenomena, and interfere with the course which changes would take if mechanically determined. That supposition rested on an imperfect acquaintance with facts, in which all equally shared. But now that increased knowledge seems to justify the conclusions, that physical continuity is never broken, and that nothing in the shape of cause ever presents itself to us, since we are witnesses only of successive phenomena, it is absurd to treat these conclusions, which simply describe the facts now ascertained, as being explanations as well as descriptions. It is perfectly legitimate to say, we will not go beyond these facts by making any attempt to account for them ; but that is quite different from maintaining that so to confine ourselves to the phenomena is itself a philosophical explanation of them. The mistake is fostered, if it has not been engendered, by the practice of calling the antecedent phenomena of events their *physical causes*. No doubt the prefix 'physical' is meant to deprive the word 'cause' of the attribute of efficiency, but that word carries with it irresistibly some idea of efficiency which can be excluded only by abandoning it. Once recognize that we are confronted only by successions of phenomena, connected—so far as *appearances* go—only by sequence, and it must be admitted that here we have simply a description of the facts, without any explanation of them. In this conclusion as a description all may, sooner or later, agree. It may

come to be regarded as an unquestioned scientific truth. But if it does, that will not be the triumph of what is called the positive philosophy. For the fundamental statement of that philosophy, that it is not competent to us to recognize, nor necessary for us to seek, anything beside the co-existences and successions of phenomena, is a very different proposition indeed. And yet, because it is based on a highly probable conclusion of science, it seems often assumed, in the language of its advocates, that it stands or falls with that scientific conclusion ; and that this conclusion is as incompatible with the theological theory as the Positivist position is. But the theological theory is not weakened at all by the conclusion that the continuity of physical phenomena is unbroken ; it needs only to have slightly modified the form in which it was held before physical continuity was suspected. And, as we have seen, the Positivist supposition, that in recognizing successions of material changes we do not transcend phenomena, is entirely erroneous. In assuming phenomena to be external, they are wrong, in the first place ; for these are effects on *us*, which we objectify only by postulating an external cause which is not a phenomenon. And in assuming that they have occurred in succession they accept the testimony of consciousness to the past, which is not among phenomena, and our belief in which can never be verified. In accepting these conclusions, Positivists violate their fundamental principle.

It is submitted, then, that in Comte's statement of his third form of philosophy, he confounds a probable scientific truth, which is in no wise necessarily incompatible with the theological theory, with a philosophical position based upon it ; and that he and his school vio-

late over and over again their fundamental principle, which could be maintained only by rejecting the external world, and disowning the past, and denying the validity of all reasoning.

§ 10. HOW FAR ARE OUR INFERENCES FROM PHENOMENA
VALID ?

It has been shown that we are compelled to accept inferences relating to what transcends phenomena, if we are to recognize even the past, or anything external in the world. And it will now be contended further, that other important inferences, more often questioned, rest upon similar evidence, and cannot consistently be rejected if those just mentioned are received. But before this is attempted, it may be well to ask what degree of validity can be ascribed to any of these inferences ? Have we any reason for believing that they are more than conjectures, transmuted into convictions by general acceptance.

It need hardly be said that no claim to a knowledge higher and surer than knowledge obtained through consciousness will here be set up respecting facts, which, though not among phenomena, it is yet maintained that we may legitimately accept, and several of which nobody is consistent enough to deny. The supposition of a faculty of intuition not subject to the laws and conditions of consciousness, and giving us direct cognizance of real existence, is one which cannot be entertained, and which, in England at least, it is not necessary even to discuss. We may covet such transcendent and complete knowledge, with the irrefragable and indubitable assurance it would produce; but limits have been imposed on us which render it for ever unattainable.

The only knowledge possible to those constituted as we are is knowledge of the phenomena of consciousness, and the inferences which we draw from them. That the phenomena exist as mental states,—or rather that the present phenomenon does,—with its more or less distinctly realized suggestion of a subject which thinks and an object of thought, it is impossible to doubt; but how far the inferences which we draw from the phenomena are valid, especially when they relate to objects for ever beyond our experience, is a different and arduous question. Yet several such inferences,—*e.g.*, that the past has been, and that there is something corresponding to the permanent Ego, are indispensable. It seems impossible to deny that such inferences cannot possess an absolute demonstrative certainty, which shall be proof against all the assaults of philosophical scepticism. As inferences deduced from changing phenomena,—themselves unaccountable,—there cannot be claimed for them the indubitable validity which would belong to direct knowledge of things-in-themselves, if that were attainable, instead of impossible. Having already abandoned all pretensions to such knowledge, it must be granted that the assurance which it alone could yield cannot be bestowed by conclusions confessedly obtained by inference from phenomena. Such inferences must always be exposed to the attacks of philosophical criticism. And the defence made against these attacks can never take the form of a crushing and final overthrow. The world, *e.g.*, can never be proved to be external beyond all possibility of doubt. Nor can the veracity of memory when it testifies to the past ever be established by demonstration. ‘We are here,’ says Mr. Mill in regard to memory, ‘face to face with a final inexplicability.’

The conclusions described here as inferences from phenomena are sometimes called intuitions of the mind, and sometimes primitive beliefs, both expressions suggesting convictions directly implanted within us, as distinguished from conclusions arrived at by way of inference,—which is the view taken of them here. No doubt they—or many of them—bear now to every formed mind the character of direct intuitions and primitive beliefs, and it may well be that we inherit natures which cannot but develop these results as soon as they develop at all. But though we possess such irresistible convictions, which seem to shine by their own light, it appears to be truer to regard them as inferences, owing their immediate character to invariable experience perpetuated through countless generations, rather than as intuitions originally bestowed in their present form. For we have convictions of all degrees of strength, several of which, undoubtedly, have been engendered by experience, and are capable of reversal; some have been reversed; and it is not satisfactory, it is not possible, to divide them into two separate classes—one containing convictions intuitive and irreversible, and the other convictions presumably reversible, because their character of greater or less certainty is supposed to be due to constant experience. If constant experience can produce convictions of this kind, it is an adequate and a known cause of them, which renders other explanations of their origin superfluous. And to recognize that the present form of our indubitable convictions has been arrived at gradually, is only to recognize that the natural history of their production is similar to that which has marked large portions, if not the whole, of the universe as known to us; moreover, it is to deal only with the successions of

phenomena, with the antecedents of physical causation, and does not touch in the slightest degree the great question of efficient causation, and of the guiding intelligence concerned in their production; for these, as we have seen, are not among phenomena. Sir W. Hamilton gave to such convictions the name of beliefs, and called that knowledge which is inferred from them. His view of them is expressed in the following passage :—

‘Our knowledge rests ultimately on certain facts of consciousness, which as primitive, and consequently incomprehensible, are given less in the form of *cognitions* than of *beliefs*. But if consciousness in its last analysis—in other words, if our *primary experience*, be a faith, the reality of our knowledge turns on the veracity of our constitutive beliefs. As ultimate, the quality of these beliefs cannot be inferred; their truth, however, is in the first instance to be presumed. As given and possessed, they must stand good until refuted; “*neganti incumbit probatio*.” It is not to be presumed, that intelligence gratuitously annihilates itself, that nature operates in vain, that the Author of nature creates only to deceive.’¹

The account of our primary convictions which is given here differs, perhaps, more in name than in fact from the view of them expressed above. Sir W. Hamilton conceives of these convictions only in their present and completed state. And to us, as individuals, no doubt they have always borne that character since we apprehended them at all. They have not been compounded out of our experience. In this sense, they are to us primitive. So far, his view seems to be correct, though something might be urged, even granting

¹ *Discussions*, p. 86.

it, against calling these convictions *beliefs*. But, without discussing the great problem of evolution, it may at least be said, that it is out of harmony with the slow growths of nature, both mental and material, that such truths as those in question should be originally bestowed on each individual in a definite and finished form. That they bear to us now the character of immediate and necessary truths is undoubted; and that this is incompatible with their being mere products of our own experience cannot well be denied. On the other hand, opponents have justly urged, first, that hardly two philosophers would be found to agree as to the number of these beliefs, or as to their primitive shapes, several of them being with difficulty distinguishable from other beliefs which have been engendered in part, if not altogether, by experience. Secondly, it is fairly objected that these beliefs are not bestowed at first, and in their full clearness, on children, but gradually develop into distinctness, as their minds expand; not infrequently, however, being implied in the judgments which are formed before they are explicitly recognized. All this, surely, accords best with the supposition that they have been slowly built up by the experiences of past generations, during that increasing elaboration of the frame in harmony with its environment which has been continually proceeding. If so, these convictions cannot fail to arise in every individual who inherits his constitution of body and mind from a long series of ancestors; while, as in the case of bodily endowments, they will not make their appearance till the nature has unfolded itself to a certain degree in response to the stimuli of its own experience.

§ 11. THE DISTINCTION BETWEEN KNOWLEDGE AND BELIEF.

Now, what name should be given to convictions, at present universal and necessary, but which have been engendered in this gradual manner by a development proceeding through successive generations? To call them intuitions suggests that they not only are, but were in the beginning, apprehended directly by the mind to which they were first given; that the mind comes into being endowed with the faculty of perceiving their truth. To call them primitive beliefs carries with it a like implication, the change of name signifying only that if asked how we *know* those intuitions to be truths, 'We must reply,' as Hamilton says, 'that we do not in propriety *know*, . . . and that we can only on reflection *believe* such to be the case, in reliance on the original necessity of so believing, imposed on us by our nature.'¹

No doubt it may be said with truth that we are under the necessity of believing, but are incapable of proving, that the world is external, that we have lived in the past, &c. But besides the objections already urged against regarding such convictions, in their present form, as original endowments, there seems to be a further objection against calling them beliefs, because that word suggests that they bear an altogether different character from conclusions at which reason has arrived. For a belief is often understood to mean a conviction which we hold in spite of the fact that our reasons for it are inconclusive.

'In common language,' says Mr. Mill, 'when belief and knowledge are distinguished, knowledge is under-

¹ Hamilton's *Reid*, p. 750.

‘stood to mean complete conviction, belief a conviction somewhat short of complete ; or else we are said to believe when the evidence is probable (as that of testimony), but to know when it is intuitive, or demonstrative from intuitive premises : we believe, for example, that there is a continent of America, but know that we are alive, that two and two make four, and that the sum of any two sides of a triangle is greater than the third side.’¹

In the example of belief given by Mr. Mill, ‘we believe that there is a continent of America,’ the evidence produces, and warrants, as complete an assurance as if it were demonstrative, although it is not so ; and that happens in a great many cases. We constantly give, and are justified in giving, entire assent to propositions incapable of actual demonstration. Different conclusions are, of course, supported by various degrees of evidence, and corresponding degrees of probability attach to them. And the word belief is applied somewhat loosely to these different cases ; to some in which the probability only preponderates, or is judged to do so, as well as to others in which it is overwhelming, and the assent is complete. And hence, as Mr. Mill says, belief sometimes means a conviction short of complete, and sometimes a conviction which, though complete, cannot be demonstrated by reasoning ; and it is assumed to be therefore less worthy of confidence than a conclusion reached by demonstration, although, as in the instance of America, it may justify the most entire assent.

The word Belief, then, is of wide and indeterminate signification, since it is applied to some convictions short of complete, to others which justify entire assent,

¹ *Examination of Hamilton*, p. 60.

though not proved to demonstration, and to others universal and primitive, which we are under the necessity of believing, though incapable of proving ; and is open to objection on the ground of this indefiniteness. And it is still more objectionable because it designates a mental state compounded of intellectual, emotional, and, some would add, active volitional elements, which may be present in very different proportions. But as compared with conclusions which we call *knowledge*, in which the intellectual element predominates, although emotion may not be quite absent, *beliefs* are convictions which are ordinarily associated with stronger emotions of the kinds which prompt to action, and hence action is the great test of belief. It is a misfortune that our convictions are thus separated into the two classes of knowledge and belief, which are supposed to differ in the fact that the former consists of conclusions reached by reason, and the latter of conclusions in which ardent feeling supplements the greater or less deficiencies of evidence. For no such difference exists between our convictions. Different conclusions are, from their natures, calculated to excite more or less of emotion and action, and no doubt emotion often misleads in the estimation of evidence. But conclusions which excite the most emotion, precisely as conclusions which excite the least, are worthy of acceptance or not, according as the evidence supports, or fails to support them ; and of this reason is the only judge. It is urged that the proper way to avoid this error would be to limit the word *belief*, and especially the kindred word *faith*, to the emotion of confidence which any conclusion inspires, instead of including in them the conclusions with which they are associated. It is where a conviction excites strong emotion that it is called a belief or a

faith ; let those words designate only the emotions, to which primarily they refer, and let the conclusions which excite them be recognized as having to assert their claims before the tribunal of reason. We have seen that a conclusion may warrant entire assent although incapable of demonstration ; that is the case, for example, with the primary truths, on which all other propositions depend. The absence of demonstrative proof does not, therefore, render a conclusion unworthy of the fullest confidence ; and if it strongly excites the emotion of trust, and prompts to vigorous action, and is called a belief, or a faith, it does not therefore follow that it is accepted in consequence of the emotion it has chanced to excite, and in spite of the insufficiency of rational evidence. The evidence, though of necessity undemonstrative, may—as in the case of the primary truths—justify the perfect acquiescence of reason in the conclusion ; if otherwise, the conclusion ought never to be held, nor the feeling of confidence in it to arise.

§ 12. REASON AND FAITH IN RELATION TO THE TRUTHS OF RELIGION.

The unfortunate distinction drawn between knowledge and belief has wrought its worst mischiefs, and receives, therefore, its best illustration, in the department of religious convictions. Those who hold such convictions have suffered no little injustice, and done no small harm to their cause, by their thorough and ready acceptance of such a distinction between the two. The truths of religion are among those which are incapable of demonstrative proof ; and theologians have admitted, and eagerly contended, that they must be received by

faith. There is a general agreement about the matter ; and hence a man's religious opinions, at least so far as they are positive, are called his beliefs, or his faith. Thus a separation is made between the provinces of reason and faith, like that which divides earth from heaven. Those who reject such convictions naturally accept the account of them to which the language of theologians at any rate points, and treat them as convictions unsupported by reason, and accepted, at least chiefly, by help of the emotions. " Faith, in the religious sense," says Professor Bain, ' is mainly supplied from the fountains of human feeling.' And again : ' Religious truth cannot, therefore, be imparted, as has ' sometimes been supposed, by an intellectual medium ' of verbal exposition and theological demonstration. ' Being an affair of the feelings, a method must be ' sought, adapted to heighten the intensity of these.'¹ It is often, and most naturally, brought as an objection against religion, that in order to receive it, reason must be silenced, and the most momentous truths be accepted by faith alone, of which feeling is the principal, and, if reason be silenced, the sole element.

It is, indeed, far from the intention of theologians to withdraw questions of religion from the tribunal of reason, as the history and character of theological debate sufficiently shows. They have always been ready to engage in controversy respecting the evidences of Christianity, and to conduct it with the freest appeal to reason. And this not only in regard to what are called the external evidences—the testimonies of history and of Scripture, but also in regard to the internal evidences, which consist of spiritual acts and emotions. These are properly regarded as constituting, to him who

¹ *The Emotions and the Will*, p. 532.

experiences them, evidence of a most important and convincing kind. It is not that these feelings do instead of evidence, and supplement its deficiencies, and require no sanction from reason. On the contrary, they *are* evidence, reason sits in judgment upon them, and assigns them a high evidential value, which has been expressed in many a powerful argument on the Christian side. In this respect, the practice of Christian advocates has happily belied their theory.

The theory is not that faith is only emotion ; if it were, the necessity of constant appeal to reason in religion would be obvious ; but faith is often treated as a special faculty, by means of which religious truths are apprehended, and which is taken as including a certain intellectual apprehension along with the appropriate emotions. And it is explained that the unspiritual fail to apprehend religious truth, because this faculty has not been developed in them. It is therefore admitted that, in perceiving and accepting religious truth, there must be what approximates to an intellectual act as well as the element of feeling, but theologians are in the habit of ascribing all to a special faculty. But what is there to justify this multiplication of faculties ? Surely it is not two sets of faculties which are concerned here, but the same set of faculties occupied on different subjects. By relegating the whole operation to faith, theologians mean to refer it to this peculiar faculty, which is assumed to be perceptive as well as emotional ; but they are understood, not unnaturally, to withdraw religion hereby from the domain of reason, and the demand for evidence, and to make it a matter of boasting and praise to have faith strong in proportion to the weakness of the evidence of which reason can judge.

It may be said that spiritual perceptions have distinctive characters, to which many are blind, and which, therefore, require a special faculty for their apprehension. But the same might be affirmed of refined moral emotions, which merge imperceptibly into religious feelings, and, like them, can be fully appreciated only by those trained and cultured into special sensibility. Subtle intellectual and emotional distinctions of whatever kind can be apprehended only after a certain development reached by cultivation, but one does not ascribe the refined sentiments and judgments hence arising to new faculties. Feeling enters largely into morality, as it does into religion; the judgments which are formed respecting both are mainly judgments respecting emotions; but the intellect can operate upon these materials as well as upon those so-called external facts which, likewise, are mental manifestations.

If it be urged that religion professes to bring the true worshipper into personal relations with the invisible God, who is believed to influence the human soul; and that no room is left for such fellowship if religious feelings and perceptions are to be ranked among other intellectual and emotional states; the reply is, that we are now dealing with mental states considered merely as phenomena, *i.e.*, as they present themselves to us. But the whole argument of these pages goes to show that the character of phenomena points irresistibly to things not seen, necessary to account for them. Among others, the phenomena of religious thought and feeling point to this conclusion,—suggest, compel the *inference* of a Divine Being, accessible in prayer. But, as in other cases, this is an inference from phenomena respecting what lies behind them; God is not Himself a phenomenon. The inference respecting God rests, as

we shall soon see, upon the same basis as our inference respecting other conscious beings like ourselves ; their minds are not phenomena, but are known to us only as inferences from them. It is maintained that the facts which lead us to believe in and seek fellowship with God are—like those which lead us to believe in and have fellowship with one another—simply phenomena, that is to say, certain mental states, sensational, intellectual, and emotional, which carry legitimate inferences respecting other conscious beings.

It may be objected, once again, that to accept a doctrine like that of the Trinity, for example, in regard to which, not only is direct evidence, from the nature of the case, unattainable, but we are, besides, quite incapable of conceiving the mode of Being which the word signifies ; in a case like this, it may be said, reason cannot possibly sanction our acceptance of a conclusion which confessedly transcends reason. If it is to be received at all, it can be received only on the warrant of some higher faculty, which comes to our aid where reason fails. But is it only certain religious doctrines which we accept, if we hold them at all, on such conditions ? Rather, have we not, in the preceding pages, met with instance upon instance in which our most fundamental convictions involve us in seeming contradictions ? At least reason can give no explanation of them, and yet reason accepts them and defends them without hesitation. What we call the present time is an instance ; for, as we have seen, it is merely the boundary between the lapsed past and the future, and cannot consist of the smallest fraction of an instant, while yet a feeling, to be apprehended in consciousness, must last an appreciable interval. Our notion of time is full of impossibilities, and so is our notion of space ;

yet we do not reject these notions, nor do we ascribe them to some special faculty transcending reason. Then what justifies reason in endorsing these convictions which transcend reason? The situation, surely, is this—although the ideas involved in our notions of space and time present irreconcilable inconsistencies, if reason were to reject them in consequence, she would encounter at every turn facts which would mock her rejection as an absurdity, and compel her to act as if the rejected notions were valid, in spite of any speculative scepticism. That is to say, counter-arguments, which reason cannot refute, may be urged for and against these notions; but to reject them would be to do far more violence to the evidence than is done by accepting them; and in this, as in ten thousand other cases, where the evidence is conflicting, we accept that conclusion to which the balance inclines. We rest in such conclusions the more readily, because we have abundant proof that our notions are partial, imperfect representations at the best of the facts to which they correspond; so that the facts may quite possibly be free from the inconsistencies which attach to our ideas of them. We hold our ideas respecting time and space, then, at least provisionally, as conclusions of reason upon the evidence before us; and the want of consistency between the ideas, instead of leading reason to reject them, leads her to the juster inference that our conceptions, valid and inevitable in our present situation, are not realistic, or strictly representative of things-in-themselves. The case stands thus, it is maintained, in regard to all our fundamental convictions, which rest ultimately, as all allow, on conceptions which reason cannot prove. But do we, in accepting them, set reason aside, and ignore her protests? On the contrary, we receive them at her

bidding, we acquiesce in them by her authority. On what evidence, then, does she endorse convictions which she cannot prove? On the evidence of their conformity with our constantly-recurring experience. That justifies their acceptance by reason as valid, at any rate, from our present standpoint, although she cannot explain them on *a priori* grounds, and some of them may even seem inconsistent with others.

It is maintained, then, that we are not warranted in receiving any conclusion, religious or other, by faith as distinguished from reason. For if by faith be understood the emotional element which accompanies conviction, it cannot be contended that we are justified in accepting any proposition because it excites an emotion: while if there be included in the meaning of faith, some higher perceptive, and therefore intellectual faculty, which is able to penetrate where reason cannot enter, such a claim, which virtually ascribes to man two sets of faculties for apprehending truth, cannot be allowed. The supposition seems to have arisen from the fact, that many religious, and all our primitive, beliefs, command the widest and most entire assent, although incomprehensible by reason, and of course, therefore, incapable of demonstration. But it has been shown that it is a mistake to suppose that such convictions are held in opposition to reason, or even independently of reason. On the contrary, reason gives them all the sanction which they have. To those constituted and circumstanced as we are, there is nothing in their incomprehensibility to prohibit their acceptance, or to excite surprise. We receive them or reject them according to the evidence, of which reason is the only proper judge. If the evidence is conflicting, the conclusion will, or should, possess only a proportionate probability, and

excite only a corresponding degree of confidence. But often, as in the case of our so-called primitive beliefs, and in regard to many facts which rest upon testimony, a conclusion incapable of absolute proof excites, and justifies, as complete an assurance as if it had been reached by demonstration. It has been pointed out that all demonstration rests ultimately, to us, on such indemonstrable convictions. The evidence on which reason pronounces may be, it should be remembered, of the most varied kind, wide as the range of our nature, and its relations to the material and spiritual worlds which surround it. Conclusions which conform to our invariable experience, and which are echoed by those about us as in harmony likewise with theirs, cannot but come home to us with the irresistible force of certainty.

§ 13. TRANSCENDENTAL INFERENCES INDISPENSABLE,
THOUGH UNPROVEABLE.

Certain of our primitive and religious beliefs do not relate to phenomena, but to facts, powers, beings, or whatever they may be, *inferred* to exist in order to account for phenomena, and never presented among them. What reliance can be placed on such convictions? If, it may be argued, even things which appear are demonstrably unreal, how can reality be ascribed, and by reason, to what never appears? We have already had examples, in the case of the past and of power, of facts not phenomena, which, nevertheless, we *infer* and *believe* to have been, or to exist, on the ground that they seem necessary to account for the phenomena. But it will be asked, what higher character than assumptions can such conclusions bear, however irresis-

tible they may be ? It has been already admitted that these, and other such convictions, are incapable of philosophical proof. We are so situated that we cannot obtain this in regard to our most fundamental and unquestioned assurances. We ascribe to force, *e.g.*, which never appears, a reality and a permanence which does not belong to phenomena by means of which alone we apprehend it. We infer the existence of force as the producing cause of phenomena (their *physical* causes being antecedent *phenomena*), and ascribe persistence, existence, to it, and not to them. And unless we accept one and another such inference, we must abandon all reliance on our faculties ; and if we act on our mistrust, we shall cease to exercise them. For we shall reject the testimony of memory to the past, and the validity of the processes of reasoning, and be left alone with the now-present feeling—a solitary phenomenon, beyond which we cannot stir. We must, then, on any view, act on the assumption that memory is veracious, and the reasoning process valid ; and our experience of phenomena which has suggested, continually verifies these inferences which relate to what transcends phenomena. But we are so cut off from things-in-themselves, that it must always be open to the determined sceptic to question the truth of our most fundamental convictions. Philosophical certainty, based on absolute proof, they have not ; but it by no means follows that to proceed on their truth in practice, and deny it in theory, is a course which philosophy can sanction. That is an altogether inconsistent proceeding. For it cannot be defended by saying that only the phenomena are accepted, and only the inferences which transcend them denied. For we cannot reason at all without assuming that we have had certain past mental

states which exist no longer, and every inference we draw assumes the unproveable reliability of inference. The absence of certainty obtained by demonstration should by all means be recognized ; but when it is granted, we are left to face the alternatives—that convictions irresistibly suggested to us by experience, and invariably according with it, and indispensable in practice, are either true or false. Convictions of this character resemble many more which we receive upon testimony, such as the one lately mentioned, our belief in the existence of America. Though incapable of proof that is demonstrative, such convictions receive and deserve the most entire assent, and to withhold it because of the lack of formal demonstration, would not be defensible on philosophical grounds. Since all demonstrated conclusions rest on unproveable convictions, to reject these last is to reject everything. Such assurance the convictions in question possess, subject only to the possible correction that, though our experience confirms the particular form in which they are conceived by us, which is true from our point of view, it may well be that these conceptions of ours contain subjective and distorting elements.

A conviction like the existence of America, which relates to phenomena, though the phenomena are not before us, is true in the form in which we hold it ; that is to say, in certain circumstances we should have before us the phenomena which we call America ; but to a reality like force, which is never a phenomenon, we cannot ascribe any form, nor can any conception which we frame of it pretend to be adequate. Nevertheless, in recognizing power as a something, the nature of which is unknown, which is capable of producing the effects that we witness, we choose the alternative which


reason elects in presence of the evidence ; and reason rejects the other alternative, that we should disallow everything except phenomena. We have seen that without the recognition of power external to phenomena, we could not regard the world as external, for, speaking strictly, its phenomena are *effects on us*, and subjective. The recognition of what is outside us in space, and distant in time, depends, then, on the acceptance by reason of what transcends phenomena. Reason may admit that her conceptions of such realities may be, must be, imperfect ; but she will judge also that her conceptions, recognized as imperfect, are nearer the truth than the decision to reject all conceptions of the kind would be, which would land in extreme Idealism, prohibited from transcending the single phenomenon now present.

Our extended knowledge of nature is gained by affirming of instances untried what has held good in similar cases which are past. In doing so, we assume the constancy of nature in the future, which can never be proved, and is at best only probable ; and we transcend phenomena in referring both to the future and to the past, and in assuming the unproveable validity of inference. Without transcending them, we cannot move a step in any direction ; when we reason about phenomena themselves, we transcend them, for we rely on the past if not on the future, as well as on the validity of inference. It is similarly in virtue of an inference from phenomena, incapable of proof, but commanding assent from its conformity with constant experience, that we recognize external force or efficient causation—allowing our ignorance of its nature, and even that our vague conception of it may be inaccurate. Still, the reality of something competent to produce

effects has all the evidence we can have for anything beyond the now-present phenomenon.

We transcend phenomena in an inference supported by similar evidence when we believe in a permanent something, or Ego, underlying the ever-changing series of our conscious states. *As phenomena*, those states present nothing more than successive trains of more or less complex feelings and ideas ; no permanent element whatever appears among them. Our conviction of continuous existence is, as we apprehend it, no more at each instant than a present feeling, distinct from all vanished feelings of the same kind which we have had in the past ; and there is no connection which we can discover between those past feelings and the present one. But a mere series of feelings could not, as Mr. Mill well expresses it, 'be aware of itself as a series.' There would be nothing continuous about it ; and hence our conviction that there is something permanent in our mental life is a delusion if phenomena only be recognized, and we hold mind to be a mere stream of feelings. To hold even *that* is, as we have seen, to transcend phenomena, for it is to hold the unproveable reality of the past. Unless, therefore, we refuse to admit that we are in any sense the same beings as we were a year ago ; unless we deny that we were living yesterday, and contend that we have nothing but a present belief that it was so, which is erroneous, we must recognize a something permanent which experiences our successive feelings, which is not a phenomenon, and of the nature of which we are ignorant. In other words, we must, in this case also, accept an inference drawn from phenomena, respecting what transcends phenomena ; and human life would be impossible unless we acted on this inference. Nor

can we here distinguish and say, In practice we accept and proceed on this supposition, but we reject it as philosophically unwarranted, because it cannot be proved. For it is not a phenomenon which is in question, which must be an *effect on us*, indeed, but may be wrongly interpreted. It is the existence of a permanent something—a persisting something, if the expression be preferred—which is required to justify our irresistible conviction of continuous life,—which permanent Ego, indeed, we cannot prove to exist, but which we cannot deny or question without supposing that our life is a delusion. To maintain that our present conscious state is all that we are, or ever have been, is a belief which, if entertained, would paralyze activity ; but which, from the absence of all such effects, it is evident that no one seriously holds. Yet our present conscious state is the only phenomenon before us ; and because much more than that must be, and have been, unless our life is based on falsehood, reason is justified in recognizing a real, but most imperfectly known Ego, and in doing so transcends phenomena. That is to say, this is the inference to which, upon the evidence, reason irresistibly inclines ; and the inference is,—not merely that for practical purposes we must assume a phenomenal and possibly illusory permanent Ego (for there is no *appearance* of such an Ego, which *must* be admitted, though it may be deceptive),—but that there really is something which corresponds to it ; although it is undeniable that the philosophical sceptic who rejects the inference cannot be confuted. He must, however, be reminded that the validity of all reasoning, and therefore of his, is open to doubt, on similar grounds, and that on his principles the externality of the world, and the



truthfulness of memory, must also be denied ; and when all these are in consistency rejected, nothing will remain to him but the useless residuum of his now-present feeling. Professor Ferrier has properly insisted that the Ego, or subject, is the one universal element in all our experience : the objects of thought vary perpetually, but in every conscious state there is a more or less explicit recognition, that *I think this*, or feel *that*. But the Ego is not hereby revealed as a phenomenon. For, in the first place, it is only the mature mind which clearly recognizes the subjective Ego ; and further, what leads it to infer a permanent Ego is the complex background of fused feelings making up at each instant our life as we apprehend it ; and with this each new mental state allies itself, seeking its like, and discriminated from contrasted feelings. A single isolated feeling, out of relation to others, could not be recognized at all. But this background of feeling, at any given instant, is a fugitive conscious state like every other ; it is not the permanent Ego, but only the phenomena which irresistibly suggest it. The phenomena consist of a group of present and transient feelings ; the inference which they compel is that a permanent something experienced formerly feelings recognized as similar to those now brought up in idea. This something permanent is an inference which, though incapable of proof, commands the entire assent of reason, and excites the strongest feelings of confidence, and hence takes rank among our fundamental beliefs.

We believe no less confidently in the existence of other minds like our own : what warrant have we for this belief ? In discussing this question before (pp. 106-118), from the physiological standpoint, the conclusion

seemed beyond question that, on the materialistic hypothesis, we have no evidence of consciousness or intelligence in others, and have no right to predicate in connection with that hypothesis, incommensurable facts which leave no trace in the physical situation, and for which no room can be found there. It was pointed out that the minds of others make no direct impressions on us; we never perceive their mental acts; but certain of their bodily movements, gestures, expressions of countenance, vocal utterances, or written signs, are taken as the indices of thoughts and feelings which themselves are never perceived. Since, then, other minds signal to us only by bodily movements, by what right, it was asked, does the physical student affirm that thoughts and feelings for ever imperceptible lie behind the movements? The reply of science is thus expressed by Professor Huxley:—

‘It is wholly impossible absolutely to prove the presence or absence of consciousness in anything but one’s own brain, though, by analogy, we are justified in assuming its existence in other men.’¹

Our warrant for believing that consciousness is associated with the bodies of others is, we are here told, that it is allied with our own. And, undoubtedly, if consciousness is capable of existing in physical combination with our own bodies, it is equally capable of being physically connected with the bodies of others. But though we each have the most indubitable evidence of the present fact of our own consciousness, it has been shown that science dispels the realistic illusion that consciousness is physically connected with our bodies. For our bodies belong to the external world,

“The Hypothesis that Animals are Automata,” p. 565 of *The Fortnightly Review*, for Nov., 1874.

erroneously assumed to be what in perception it seems. In treating them so, we make the materialistic assumption quite necessary from our present point of view, but demonstrably illusory ; and it was shown at length that when we ascribe a hypothetical external character to certain of our conscious states we are not at liberty to connect with them, so regarded, other conscious states not so regarded. Hence the only reason alleged to prove that consciousness is united with the bodies of others, namely, that it is united with our own, breaks down ; and the conclusion holds, that science has no evidence that other conscious beings are round us, and cannot legitimately recognize them, because to do so is to predicate facts outside, and incompatible with, the materialistic hypothesis. In a word, the minds of others, and our own, are not scientific facts, and must, therefore, be disallowed. To physical science, the bodies of others, and our own, are pure automata, destitute of consciousness as well as volition, and those who accept the materialistic hypothesis as real must be challenged to adhere to this its inevitable issue, or to disprove it. It has exactly the same validity, however, as other conclusions of physical science. If it holds true only respecting phenomena, so also do all the conclusions of science ; and we are at liberty to conclude, as an inference transcending phenomena, that other minds exist ; and no argument derived from physical phenomena can be urged against their existence, for we have abandoned the realistic view of Materialism. And then all other physical reasonings which go to exclude the possibility of 'spirit and spontaneity,' must likewise be dismissed as illegitimate, because they carry conclusions which relate only to

phenomena beyond the limits of appearances. On the other hand, if the conclusions of physical science hold really true, we are debarred from believing that human bodies have minds, for all the physical evidence is against the supposition. Nobody will seriously abide by this negative conclusion of science, and deny that consciousness resides in the bodies of others. Nobody will take even the sceptical ground, and say, Though I cannot disprove that my neighbours are conscious, I cannot admit that conscious beings exist, since their consciousness is not a phenomenon, and leaves no trace on the physical situation. That would be the Positivist position; but is a Positivist to be found consistent enough to maintain it? Everybody believes with the fullest assurance that the human beings around us are animated with conscious intelligence. Yet physical evidence of this there is none. Like our conviction of the past, and of our own continued existence, it is an inference drawn from phenomena respecting what transcends phenomena; yet, commanding the entire assent of reason, it excites the strongest feelings of confidence, and hence takes rank among our fundamental beliefs. And though demonstrative proof be wanting, evidence sufficient to justify our complete assurance is not. Of what, then, does the evidence consist? To hold the opposite conclusions,—that we have *not* lived in the past, that our neighbours are *not* conscious, &c., is to suppose that our whole life is a delusion, that it is nothing but a phantom phenomenon of the present,—a supposition not only overwhelmingly improbable in itself, but entirely destitute of positive evidence. As, then, in the case of other convictions, which rest upon testimony, such as the existence of America to those who have never been

there, we rely completely on ten thousand congruous indications, though they yield no formal demonstration, since to distrust them would be, by implication, to make charges of falsehood wholesale without the smallest evidence of untruth, so it is in regard to beliefs like that of our own past existence, and the conscious life of others. We rely on probable, but none the less convincing evidence, when we give credence to what is distant in time, and to what is distant in space, and to the existence of consciousness in others. And in doing so, we accept inferences which transcend phenomena.

The indications which compel our belief in the sensibility and intelligence of others consist solely of physical signs taken to signify sensations, ideas, emotions and resolves similar to our own; by so treating the physical signs, we are able to enjoy all the interchanges of intelligence and affection. It is perfectly true, nevertheless, that all these physical signs and actions are fully accounted for by physical causation; that, physically, there is neither need of, nor room for the facts of intelligence and feeling, which yet are to us the facts of principal interest and importance; so much so, indeed, that from the practical point of view we cannot but regard the material conditions of our life as the mere framework for the exercise of our mental faculties, and the accomplishment of our purposes. On the lowest view of our life, it is assumed that to obtain pleasure and what feeds it, and to avoid pain, are the motives which rule and direct human action. Yet physical science is incompetent to recognize even these motives as able to determine conduct, since every act is fully accounted for by physical causes alone.

Yet though the physical situation not only does not require, but prohibits, the recognition of causes other

than physical, in practice nobody obeys ~~that~~ prohibition. On the contrary, from the physical phenomena, physically accounted for, an inference is universally and unhesitatingly drawn relating to what transcends phenomena—the inference that the bodily movements of others indicate the thoughts and feelings and volitions of minds like our own. The successions of physical sequences, considered merely as material changes, do not warrant any such inference ; but when we take certain of them to indicate mental facts, we find among these assumed mental facts, intentions and desires which are followed by actions which fulfil them ; and exchanges of thought take place by means of these signs, and assurances of affection are received through them, all which are verified by conduct conforming thereto. Disallow these mental facts, as physical science ought in strictness to do, and, undeniably, there is nothing left but what physical causes will produce ; but to do so is to exclude the facts of chief interest and importance in practical life—the thoughts and feelings of our fellows ; and our own conscious states must be ignored as well as theirs, for we do not find them in physical combination with our bodies. But it is impossible to take this course, for it is to reject our own consciousness, which has for us the highest warrant of all, for the sake of an assumption respecting a certain class of its states, which assumption is itself based upon our consciousness.

The proper course to take in these circumstances is obvious. The materialistic assumption must be freely recognized as valid respecting external phenomena, and carried to its logical issue of entire and exclusive supremacy. But in its exclusiveness and incompatibility with a single fact of mind lies the demonstration

of its non-reality. In denying consciousness to others, and even to me, its merely hypothetical character is plainly revealed. Every consideration goes to show—Materialism itself, when the attempt is made to associate it with the consciousness by which alone we apprehend it, proves—that conclusions respecting the external world, as it is perceived by us, are valid only within the limits of the class of phenomena called physical, themselves reducible to the larger aggregate of our conscious states; and this being so, the **conclusions of physical science cannot prohibit** inferences which relate to facts outside Materialism. Hence the fact that physical science is bound to deny consciousness to others, instead of being evidence against their possessing it, is but evidence of the limits within which the conclusions of science hold true, and of the non-reality of the materialistic hypothesis which it expounds; and we are at liberty to draw the inference that other minds like our own exist round us, from the thousand indications of our experience which compel reason to this conclusion.

§ 14. THE BELIEF IN A DIVINE CREATOR AND RULER.

There remains to be mentioned one more inference which reason draws from phenomena, the legitimacy of which has been the subject of prolonged controversy—the inference that Divine Intelligence produced and governs the universe. It is urged that this conclusion, when it occupies its place in the present argument, is free from some of the objections which have been raised against it elsewhere, and especially that it loses the exceptional character which it has been supposed to bear.

For it takes rank here among the several other inferences which have been drawn—that, for instance, of the reality of the past, that of power, that of a permanent Ego, and of other human minds—all of which, we have seen, are inferences from phenomena respecting what transcends phenomena. It is maintained that the belief in God is a conviction resting upon similar grounds, and that it must stand or fall according as those other conclusions are accepted or rejected. If this be so, it follows, of course, that the being of God is incapable of the demonstrative proof by which it has often been sought to establish it. But in this respect it only resembles the other convictions just mentioned. The preceding pages have shown that strict demonstration is unattainable by us, except in regard to the existence of the now-present phenomenon—*I experience this feeling*. Even the demonstrations of mathematics, valid as they are when certain assumptions are granted, rest upon sundry axioms and fundamental beliefs respecting the past, and the continuance of the present constitution of things, which themselves are incapable of proof, and are, as has been shown, inferences transcending phenomena. These inferences, supported by ten thousand congruous indications, inspire and justify the most complete reliance, but formal demonstration they lack.

Such, it is maintained, is the character of our belief in a supreme and intelligent Ruler. It is perfectly true that the whole weight of scientific testimony goes to establish the unbroken continuity of physical change throughout the material universe, and therefore to exclude those interpositions of Divine Intelligence which have been regarded as the footprints of the Creator, to reject which was to deny Him. So far, the scientific

contention on this matter seems to be established. But we have seen that exactly the same conclusion holds respecting the mind of man. His bodily frame, his nervous organism, belong to the material universe without reserve or exception; physical causation, therefore, rules over them, admitting no ruptures of continuity by the interpositions of mind, affording no physical evidence whatsoever of consciousness. Consequently, human intelligence is as inadmissible, on physical grounds, as Divine Intelligence; in this respect, the cases are precisely similar. Yet while science refuses to acknowledge Divine Intelligence, because no traces of its directing interferences appear, intelligence is freely ascribed to man, his achievements are extolled as its triumphs with unhesitating confidence, and ingenious theories are still devised to explain how his mind controls his body. They are still devised and discussed, though exactly similar attempts to account for the control of Divine Intelligence are set aside as inadmissible.

We have seen what is the proper course to take in this difficulty as regards human intelligence. There must be no tampering with the physical evidence; the materialistic hypothesis must be carried to its logical issue of entire and exclusive supremacy, prohibiting the recognition of a single fact of consciousness, even in ourselves. But this inevitable conclusion proves the non-reality, the limited applicability of that hypothesis, for it is in our consciousness alone that matter is revealed to us. Our consciousness, then, which is incompatible with the materialistic hypothesis, has a prior claim to recognition. In other words, we must recognize our intelligence, and all which is involved in it, though no room for it is found in the materialistic

hypothesis ; and to do so is to deny, by implication, the real truth of that hypothesis.

The existence of other minds, though not absolutely indubitable like that of our own consciousness, is an inference from phenomena sustained by an overwhelming number of indications ; and its incompatibility with the materialistic hypothesis is no argument against it, since that hypothesis is demonstrably unreal, and valid only within the limits of a certain class of phenomena. Therefore, from the material phenomena of human activities we infer that human intelligence directs them, although directing intelligence, and bare passive consciousness, are alike incompatible with the materialistic hypothesis.

The argument for Divine Intelligence is subject to the same difficulties, which must be encountered in the same way, and will conduct to a similar conclusion. The scientific evidence must be carried fearlessly to its legitimate issue, that physical continuity reigns unbroken in the material universe. Divine Intelligence and power will never be discovered among the material sequences, for they are not *phenomena*. But precisely as the activities and achievements of a man, though fully accounted for, in a scientific sense, by physical causation, compel us to ascribe them, in a deeper and truer sense, to his intelligence ; and the incompatibility of his intelligence with the materialistic hypothesis is but one among many proofs of its non-reality ; so, likewise, the ceaseless activities and mighty product of the ordered material universe, equally explained, in a scientific sense, by unbroken physical causation, compel the further inference that intelligence designed and governs the whole ; and the incompatibility of this inference with the materialistic hypothesis condemns the

hypothesis, and not the inference. Nor is this a case of mere analogy between two similar sets of facts. The things compared are an entire set of facts, and a portion of the same. For man, as we are rightly taught by science, is himself strictly a part of nature. His body is one among many of the organisms which arise in nature, and lives by constantly weaving her materials into its fabric and restoring them to her, like every other living thing. What holds true of nature holds true, therefore, of man. What is possible in the case of man is thereby affirmed to be possible in the case of nature. When, therefore, we say that human activities, though occurring in strict conformity with physical causation, are truly governed by intelligence, we thereby affirm that natural events must be ascribed to intelligence which happen in the regular way of physical causation. The two co-exist, the seeming impossibility takes place, and in nature, since it takes place in man; and there is no further impossibility or difficulty whatsoever in extending it to other parts, to the whole, of nature. Rather, the surprise, the difficulty, the impossibility would be, to suppose that minute portions of nature exhibited intelligence, while the vast aggregate, affording immeasurably greater and richer indications of design, exhibited none.

Let it be required to account for the production of a steam-engine. Undoubtedly it would be true to say that it was produced in the regular way of physical causation; that the important contributions which human hands made to the result involved no break of physical continuity; for, if the antecedents were traced back through muscle, nerve, and brain, physiology would properly insist that the regular successions of nerve-changes proceeded without any rupture. This

is equivalent to saying that a steam-engine is as completely a product of material conditions as a tree or a crystal. Yet none the less do we affirm, and we utter a deeper truth when we say that a steam-engine is a product of human intelligence, a triumph of the mind of man. But by saying so, we implicitly set aside the materialistic hypothesis, we tacitly assume its phenomenal character, and the really operative nature of intelligence. Unless, indeed, it should be contended that the ascription of steam-engines and other human works to intelligence is a metaphorical, inaccurate way of talking, exploded and superseded by the scientific discovery of unbroken physical continuity. Such is the case, beyond question, if the materialistic hypothesis is real. To attribute anything to intelligence is quite unscientific; science finds no trace of intelligence, no room for it anywhere. If we adhere to science, we must disallow altogether intelligence and consciousness too, a conclusion of intelligence which is obviously suicidal. Yet to repudiate this impossible conclusion, to recognize the action of human intelligence in the teeth of physical evidence, is to deny the reality of Materialism, and to allow that language may be true because unscientific.

In what respect does the case differ, let us ask, when, instead of a steam-engine, we take a plant as a product for which it is required to account? It is true, exactly in the same sense, and to the same extent, that a plant is the resultant of certain material conditions operating without rupture of physical continuity. But if, in spite of the adequacy of physical causes to account for a steam-engine in a scientific sense, we are none the less obliged to affirm, and utter a deeper truth when we say, that it is a product of

intelligence, and bespeaks contriving mind ; why are we prohibited from ascribing to intelligence the far more elaborate and delicate machinery of a plant, literally unsearchable and past finding out by the poor intellect of man ? Science, we are told, sees reason to account for the production of plants by the operation of physical causes alone : it finds no trace of an intelligence guiding these causes to this issue, and is therefore bound to disallow it. The contention is admitted without reserve ; and if the materialistic hypothesis which science interprets be real, the conclusion is real and irresistible that intelligence is nowhere to be found, and ought nowhere to be recognized. But then the same conclusion applies equally to steam-engines and watches, and houses and ships, and armies and governments, and all the purposive actions and intercourse of nations and individuals. To science, all these are as entirely due to physical causes, as destitute of intelligence in their production, as plants and animals are. To science, therefore, there is no intelligence in man any more than in nature. And if this suicidal conclusion, which excludes all possibility of human intelligence, be a *reductio ad absurdum* of the materialistic hypothesis which leads to it—if we utter a deeper truth, though assuredly it is not a scientific truth, when we ascribe human works to human intelligence—we have not only the same right to attribute the contrivances of nature to intelligence, but it is grossly inconsistent and indefensible to recognize human intelligence in the teeth of physical evidence exactly similar, and by an implicit surrender of the reality of Materialism, and to deny the operation of intelligence in nature, by maintaining the reality of

Materialism, which confessedly leaves no room for it. If it is imperative to recognize human intelligence, and regard human works as achievements of mind, although to do so is to concede the merely phenomenal character of the materialistic hypothesis ; it is not only legitimate, but equally imperative, to ascribe to intelligence the countless phenomena of external nature, which indicate it similarly, or rather, indicate it in degrees immeasurably higher. And if the parts compel this inference, with what overwhelming force it is borne upon us from the vast whole of the entire Cosmos ! It is affirmed, therefore, that as from the material phenomena of purposive human activities reason draws with complete assurance the inference that they are directed by minds, though this inference not only transcends phenomena, but is incompatible with the reality of phenomena ; we are more than justified, we are in consistency obliged, to draw with the same assurance a similar inference that directing mind ordered the still more remarkably purposive changes which make up the life of each plant and animal, the mighty aggregate of co-operant activities which compose the world, and the far mightier aggregate of countless worlds which constitute the orderly system of the material universe. And the many who never dream of doubting that their fellowmen have minds which govern their bodies, while they suppose the argument for a Supreme Intelligence to be extremely precarious, must be challenged to point out any such difference in the evidence for these two beliefs as to justify the very different estimates in which they are held.

It may be said, that to make the cases parallel, we should have to suppose the Supreme Intelligence related to the material universe exactly as man's mind is

related to it, and bound by the many limitations imposed upon him ; but the point under discussion is not any theory as to the way in which mind governs matter, for which there is no need when the materialistic hypothesis is recognized as phenomenal ; nor do the true relations of the perceived world to the realities behind it, or of lower to higher intelligences, come to be considered here. The simpler question is as to the legitimacy of ascribing purposive actions to intelligence, although the study of material phenomena treated as real discovers no trace of mind, and excludes the possibility of it. And it is contended that since this *non-scientific* inference is made with perfect confidence in regard to the purposive actions of men, which stand comparatively low in the scale, it is impossible to reject it in regard to facts holding the very same position in the physical argument, and exhibiting immeasurably more numerous, more elaborate, and truly overwhelming indications of design. The alternative argument may be urged with at least equal force. If the transcendent indications of design afforded in external nature, and pre-eminently in the Kosmos considered as a whole, do *not* justify the inference that intelligence devised them, *à fortiori* human activities and achievements, which, though deemed irresistible proof of man's intelligence, stand much lower as evidences of design, will not bear that inference. Nor can it be pretended that the analogy of other men to ourselves makes all the difference between the two cases. For we have seen that we cannot begin by assuming that intelligence directs our own bodies, for that is equally impossible scientifically ; so that to admit the existence even of our own minds is implicitly to deny the reality of the materialistic hypothesis, and remove the obstacle to

the recognition of other intelligences and of a Supreme Mind. If, then, there were but one man in the world, the operation of his own intelligence in it would be sufficient to prove the illegitimacy of denying that intelligence contrived it, on the ground that mind is incompatible with physical phenomena.

We conclude, then, that science is perfectly right in proclaiming the entire subjection of nature to physical causation, and refusing to acknowledge intelligence anywhere. That is the truth of appearances, the conclusion to which we are led if we confine ourselves to physical phenomena. But a deeper truth, a truth of reality, is proclaimed in the words, 'God created the heavens and the earth.' Had the slow evolution of nature been watched from the beginning, nothing would have appeared but the regular succession of physical causation, and had science recorded the development, she could have recognized nothing more. But none the less the language of reality respecting the great series of phenomena is,—the Spirit of God moved upon the face of creation, changing the chaos to order; and that Spirit is presiding still. And to say so, is exactly like saying of man that, to science, he is an automaton, wholly subject to physical causation. That is the truth of appearances about him, the conclusion to which we are led if we confine ourselves to physical phenomena. Nevertheless, beyond all question, the language of reality respecting man is, that he is a conscious, intelligent being, capable of forming and performing designs, and largely responsible for his actions.

We have before us, then, two incompatible conclusions, each of them legitimate on its own ground. When we proceed on the materialistic hypothesis, as we constantly must, being face to face with its *appear-*

ances, we shall, if we carry it out consistently to its issues, admit the entire and exclusive supremacy of Materialism, and hold that physical continuity is never broken. But the existence of our own consciousness, through which alone we perceive the world, is sufficient to disprove the *reality* of Materialism ; and that recognized, we may use our liberty to draw inferences incompatible with it and transcending phenomena ; among them, that other intelligences like our own, and a Supreme Intelligence, are accomplishing their purposes around us. We describe another aspect of the same situation when we say that, if we confine ourselves to physical causes, we recognize only antecedent phenomena, which it is misleading to speak of as causes at all. We refuse to transcend phenomena ; and *among them* are no *causes* properly so called. But we cannot, as just shown, confine ourselves to phenomena ; to account for what appears we must assume what does not appear ; in other words, to account for *phenomenal effects* we must assume *non-phenomenal causes*,—power, or powers, known only through their effects, whose nature is inferred only from the character of those effects, which irresistibly suggest that the power is guided by intelligence. At least, if that inference is denied in regard to the great aggregate of phenomena, it must be denied in regard to those minor groups of them which are supposed to indicate certainly the existence of human minds. No intelligence whatever can be recognized if we limit ourselves to successions of phenomena, miscalled physical causes and effects, which are, in strictness, mere series of effects.

§ 15. MAY DEFINITE ATTRIBUTES BE ASCRIBED TO
THE SUPREME BEING ?

Thus far we have employed the general and abstract terms Power and Intelligence to describe the causes or cause to which we are compelled to attribute the phenomena of nature at large, on the same grounds as we are compelled to ascribe the minor groups of activities presented by human organisms to the particular and limited forms of power and intelligence, termed human minds. But the question arises, how far is this parallelism to be pushed ? How far are we justified in ascribing to the Supreme Power and Intelligence exhibited in nature the characters which their lower forms bear in ourselves, and, as we assume, in our fellowmen also ? Is it right or wrong to take our very imperfect intelligence as in any respect a model after which to frame a conception of the highest ? to suppose that the Supreme Mind wears in some degree the image of our own ? The question has been much debated, and is largely discussed in our day. It may seem that reverence and truth alike conspire to forbid the supposition of any resemblance between the two, or any argument of analogy from one to the other. And up to a certain point this is recognized on all hands. It is allowed that we cannot form adequate or self-consistent conceptions of a Being possessed of infinite power, intelligence, and goodness. Without accepting as satisfactory representations of God the abstractions whose inconsistencies Mr. Mansel exhibits, his conclusions respecting such conceptions as we can form of His nature and attributes are indisputable.

‘The conception of the Absolute and Infinite, from
‘whatever side we view it, appears encompassed with

‘contradictions. There is a contradiction in supposing such an object to exist, whether alone or in conjunction with others; and there is a contradiction in supposing it not to exist. There is a contradiction in conceiving it as one; and there is a contradiction in conceiving it as many. There is a contradiction in conceiving it as personal; and there is a contradiction in conceiving it as impersonal. It cannot without contradiction be represented as active; nor, without equal contradiction, be represented as inactive. It cannot be conceived as the sum of all existence; nor yet can it be conceived as a part only of that sum.’¹ ‘The fundamental conceptions of rational theology being thus self-destructive, we may naturally expect to find the same antagonism manifested in their special applications. . . . A mental attribute, to be conceived as infinite, must be in actual exercise on every possible object: otherwise it is potential only in regard to those on which it is not exercised; and an unrealized potentiality is a limitation. Hence every infinite mode of consciousness must be regarded as extending over the field of every other; and their common action involves a perpetual antagonism. How, for example, can Infinite Power be able to do all things, and yet Infinite Goodness be unable to do evil? How can Infinite Justice exact the utmost penalty for every sin, and yet Infinite Mercy pardon the sinner? How can Infinite Wisdom know all that is to come, and yet Infinite Freedom be at liberty to do or to forbear? How is the existence of evil compatible with that of an infinitely perfect Being; for if He wills it, He is not infinitely good; and if He wills it not, His will is thwarted, and His sphere of action limited.’²

¹ *The Limits of Religious Thought*, pp. 58-9.

² *Ibid.*, pp. 50-1.

But the preceding pages have abundantly shown that similar contradictions meet us in regard to other things, —our own continuous life, our personality and freedom, and even in regard to notions so fundamental as those of Space, Time, and Motion. That we should encounter them when we attempt to conceive the highest Being is inevitable, since we encounter them in conceiving what is lower. So far, then, from our conceptions of God being exceptional in this respect, they simply exemplify our uniform experience. And the inference to be drawn here, as elsewhere, is this, that our conceptions, derived directly or indirectly from phenomena, are not adequate to represent the realities transcending phenomena which, dimly shadowed forth, are yet irresistibly suggested to us. The realities themselves are confessedly inaccessible to us; absolute knowledge of them, admitting of no doubt, is in the nature of the case unattainable. What opinion should we hold of them, then? Reason rests with assurance in the conviction that phenomena indicate certain realities lying behind them. Ought we to stop short at that general and indefinite admission, and leave the character of the realities a perfect blank in our minds; or are we justified in ascribing any attributes to them?

In regard to the Power manifested in the universe, Mr. Herbert Spencer holds that we are justified in affirming such an efficient cause, but not justified in investing it with definite attributes. He writes:—

‘When we inquire what is the meaning of the various effects produced upon our senses, . . we are compelled to regard them as the effects of some cause. . . . Be the cause we assign what it may, we are obliged to suppose *some* cause. . . . The objects and actions surrounding us, not less than the phe-

‘nomena of our own consciousness, compel us to ask a
 ‘cause ; in our search for a cause, we discover no rest-
 ‘ing place until we arrive at the hypothesis of a First
 ‘Cause ; and we have no alternative but to regard this
 ‘First Cause as infinite and absolute. . . It is hardly
 ‘needful, however, to show those who have followed
 ‘thus far, how illusive are these reasonings and their
 ‘results.¹ Those imbecilities of the understanding
 ‘that disclose themselves when we try to answer the
 ‘highest questions of objective science, subjective
 ‘science proves to be necessitated by the laws of that
 ‘understanding. We not only learn by the frustration
 ‘of all our efforts, that the reality underlying appear-
 ‘ances is totally and for ever inconceivable by us ; but
 ‘we also learn why, from the very nature of our
 ‘intelligence, it must be so. . . Though the Absolute
 ‘cannot in any manner or degree be known, in the
 ‘strict sense of knowing, yet we find that its positive
 ‘existence is a necessary datum of consciousness ; that
 ‘so long as consciousness continues, we cannot for an
 ‘instant rid it of this datum ; and that thus the belief
 ‘which this datum constitutes, has a higher warrant
 ‘than any others whatever. . . . We are obliged to
 ‘regard every phenomenon as a manifestation of some
 ‘power by which we are acted upon ; though Omni-
 ‘presence is unthinkable, yet, as experience discloses
 ‘no bounds to the diffusion of phenomena, we are un-
 ‘able to think of limits to the presence of this power ;
 ‘while the criticisms of science teach us that this
 ‘power is incomprehensible. And this consciousness
 ‘of an incomprehensible power, called Omnipresent
 ‘from inability to assign its limits, is just that con-
 ‘sciousness on which religion dwells.²

¹ *First Principles*, § 12.

² *Ibid.*, § 27.

‘Some do indeed allege that although the Ultimate Cause of things cannot really be thought of by us as having specified attributes, it is yet incumbent upon us to assert these attributes. Though the forms of our consciousness are such that the Absolute cannot in any manner or degree be brought within them, we are nevertheless told that we must represent the Absolute to ourselves under these forms. As writes Mr. Mansel, . . . “It is our duty then to think of God as personal ; and it is our duty to believe that He is infinite.”

‘That this is not the conclusion here adopted, needs hardly be said. If there be any meaning in the foregoing arguments, duty requires us neither to affirm nor deny personality. Our duty is to submit ourselves with all humility to the established limits of our intelligence ; and not perversely to rebel against them. . . . Indeed, it seems somewhat strange that men should suppose the highest worship to lie in assimilating the object of their worship to themselves. Not in asserting a transcendent difference, but in asserting a certain likeness, consists the element of their creed which they think essential. . . . And then, most marvellous of all, this course is persisted in even by those who contend that we are wholly unable to frame any conception whatever of the creative power. . . . In all imaginable ways we find thrust upon us the truth, that we are not permitted to know—nay, are not even permitted to conceive that reality which is behind the veil of appearance ; and yet it is said to be our duty to believe (and in so far to conceive) that this reality exists in a certain defined manner. Shall we call this reverence ? or shall we call it the reverse ?’¹

¹ *Ibid.*, § 31.

The line of argument adopted here was one familiar to ancient speculation. It was pushed, and consistently pushed, still further by the Gnostics and Neo-Platonists in whose systems were combined philosophical tenets derived from Greece and from the East, associated, in the case of the Gnostics, with certain Christian ideas. In following out the theory which regarded the universe as a series of emanations from the Absolute Unity, that primal source of all was removed by the Gnostics ever further back, until Basilides is reported to have held, as Dean Mansel relates, that 'the Supreme Being is one whose nature 'cannot be expressed by any language, for He is above 'every name that is named. He cannot properly be 'even said to exist, for He cannot be identified with 'any one thing that exists: He is rather to be called 'absolute non-existence.' Dean Mansel finds the germ of this teaching in Plato, whose suggestions on the subject were carried further by Philo, and adds that in the next century after Basilides, 'the same theory 'reappears in the Neo-Platonism of Plotinus, who 'speaks of the Supreme Unity as above existence, and 'again, two centuries later, in the expiring Neo-Platonism of Proclus, who speaks of God as above substance 'and life and intelligence; and it has reappeared with 'all the advantages of modern philosophical genius and 'learning in the resuscitated Neo-Platonism of Germany—in Schelling, who speaks of the Absolute as 'neither ideal nor real, neither thought nor being, and 'in Hegel, who identifies pure existence with pure 'nothing.'¹

And truly, if our ignorance of the Supreme Being disqualifies us from affirming or denying anything

¹ *The Gnostic Heresies*, pp. 146-7.



respecting Him, it disqualifies us from ascribing to Him power, or thinking of Him as power, for that, like every other attribute conceived by us, is conditioned by the narrow limits of our intelligence. How we can be justified, and even, as Mr. Spencer says, 'obliged to regard every phenomenon as a manifestation 'of some power,' and yet prohibited from regarding phenomena as manifestations of intelligence, it is, on his principles, impossible to see. If, because Divine Intelligence is inscrutable by us, to recognize it is 'perversely to rebel against the established limits of 'our intelligence,' how can we escape that charge in recognizing Power, when, as Mr. Spencer himself says, 'this Power is incomprehensible'? Clearly we must abandon power too, and also existence, and also reality, abstractions of the most perplexing and inscrutable nature, as every metaphysician knows. Impotence, non-existence, and unreality, will be fitter because less implicating names for the Unknown. Or rather, the only course to take which is consistent with the established limits of our intelligence, as Mr. Spencer understands them, is to cease to exercise it at all, and lapse into utter stagnation of thought on this subject. At any rate, Mr. Spencer's favourite recurring expressions, 'Incomprehensible power,' 'Inscrutable reality,' in the recognition of which, and which alone, he finds the reconciling truth proclaimed by science and religion, are condemned by the very reasoning by which he seeks to establish that they only are legitimate. For the epithets inscrutable and incomprehensible, applied to power and reality, require, on his own argument, that they also should be rejected, because those epithets proclaim that power and reality like other attributes, cannot be known to our

intelligence. If it were urged that they may be admitted with the understanding that they are imperfectly apprehended, the same may be claimed, and is, indeed, all that is asked, in regard to other attributes.

§ 16. THE INCONSISTENCY OF MR. SPENCER'S TRANSFIGURED REALISM.

It has been said that Mr. Spencer's argument, carried to its issue, would conduct us to utter stagnation of thought on this subject. But is it on this subject only that our minds will be perfectly passive and neutral, if we are neither to affirm nor deny in cases where our conceptions soon land us in contradictions? Every thinker is aware that we need not go to the Infinite or the Absolute to find such conceptions—that we encounter them quickly in whatever direction our minds may move. The preceding pages have shown that mind and thought, matter and motion, time and space, consciousness in our fellows, the permanence of the Ego, the freedom of the will, all land us, as we apprehend them, in seeming contradictions. All involve inferences transcending phenomena, to which, nevertheless, reason, investigating phenomena, is irresistibly led. Unquestionably these contradictions proclaim that the conceptions which lead to them are inadequate, inaccurate. In this situation what course do we take? We recognize that our conceptions of mind and thought (in others and ourselves), of matter and motion, of time and space, are imperfect conceptions, but it is a practical necessity to hold them and act on them provisionally. How could we refuse to affirm or deny that other

minds are round us, that the past has been, and that we have lived in it? And though we cannot attain absolute knowledge respecting these inferences, or beliefs, our conviction is not doubtful that realities are indeed indicated by these imperfect and even contradictory conceptions. They are symbols of those realities, the only ways in which we can apprehend them, and therefore true for us, though confessedly imperfect. We hold this, although it can never be proved. And strange to say, Mr. Spencer holds it. He shows at length that 'the concept we form to 'ourselves of matter [and of mind also] is but the 'symbol of some form of power absolutely and for 'ever unknown to us; and a symbol which we cannot 'suppose to be like the reality without involving our- 'selves in contradictions.'¹

While yet he argues through many chapters to the conclusion—

'Anti-realism is betrayed by its assumption, by its 'language, by its reasonings; it is based on the nega- 'tions of three cardinal principles of credibility; it 'tacitly denies an ultimate test of truth, the very 'questioning of which implies admission of it; and 'hence Realism is negatively justified. Further, Real- 'ism is positively justified by the discovery that the 'dynamics of consciousness necessitate the realistic 'conception.'²

'But now, what is this Realism which is established 'as a datum long before reasoning begins, which im- 'measurably transcends reasoning in certainty, and 'which reasoning cannot justify, further than by find- 'ing that its own deliverances are wrong when at

¹ *Principles of Psychology*, vol. I., § 63.

² *Ibid.*, vol. II., § 471.

'variance with it? Is it the Realism of common life, the Realism of the child or the rustic?

'By no means. . . . It was shown that "what we are conscious of as properties of matter, even down to its weight and resistance, are but subjective affections produced by objective agencies which are unknown and unknowable." But while we saw that comparisons of our sensations with one another inevitably bring us to this conclusion, we also saw that every argument by which the relativity of feelings is proved "sets out by assuming objective existence," and cannot do otherwise. . . . It was similarly shown that no relation in consciousness can "resemble, or be in any way akin to, its source beyond consciousness." Similarly, however, it was there pointed out that the assumption "inevitably made in all reasoning used to prove the relativity of relations," is "that there exists beyond consciousness, conditions of objective manifestation which are symbolized by relations as we conceive them." . . .

'While *some* objective existence, manifested under *some* conditions, remains as the final necessity of thought, there does not remain the implication that this existence and these conditions are more to us than the unknown correlatives of our feelings and the relations among our feelings. The Realism we are committed to is one which simply asserts objective existence as separate from, and independent of, subjective existence. But it affirms neither that any one mode of this objective existence is in reality that which it seems, nor that the connections among its modes are objectively what they seem. Thus it stands widely distinguished from crude Realism; and

‘to mark the distinction it may properly be called ‘Transfigured Realism.’¹

With this understanding, Mr. Spencer ‘resumes’ the language and ideas of Realism, as convenient and indispensable, true for us, and shadowing forth this much of *real* truth, that there is ‘*some* objective existence,’ ‘separate from, and independent of, subjective existence.’ He does not affirm, for he does not believe, ‘that any one mode of this objective existence is in reality that which it seems;’ and yet, so far from refusing to affirm or deny anything about it, on the ground that to do so would be ‘perversely to rebel against the established limits of our intelligence,’ he declares Anti-realism to be thrice betrayed, and Realism to be positively and negatively justified. It may be replied, that it is not of crude Realism that Mr. Spencer asserts this, but of transfigured Realism, which acknowledges only ‘*some* objective existence,’ and not any particular kind. This is true; and it follows from it, that nothing particular can be affirmed of Mr. Spencer’s transfigured Realism, whereas, on the strength of its being Realism, he proceeds to resume the old realistic language and ideas, and to denounce the absurdities of Anti-realism. But Mr. Spencer cannot take credit for a philosophical Realism which is free from the erroneous implications of ordinary language, if he still continues to employ that language. He cannot make free use of it on the ground that he is a realist, and pretend that he escapes from its acknowledged inaccuracies because his is a transfigured Realism. For the transfiguration which exempts his Realism from these inaccuracies empties it of all special significance, and so disqualifies him altogether from employing the old language, since

¹ *Ibid.*, § 477.


he cannot affirm or deny anything of an objective existence, no mode of which is supposed to be in reality that which it seems. It would be different if Mr. Spencer were content with the position maintained in these pages, and were to say, 'The language of ordinary Realism is perfectly legitimate, as well as indispensable, 'in regard to *phenomena*, things as they seem; but it 'has no further validity, for we have no reason to suppose that objective reality is what it seems.' But this is the Anti-realism which he denounces. His own view, however, amounts exactly to this, which is often, though not very accurately, called Idealism, a name which would be better confined to the view that we have no right to recognize any reality behind the mental appearances which alone confront us. The upholders of this doctrine, if it has any adherents, and they alone, are pure, consistent Positivists.

With whatever inconsistency, however, the course Mr. Spencer takes in regard to the objective existence of the world is this: He affirms that there is some objective existence, but cannot affirm that it is what it seems. Nevertheless, he freely resumes the language and ideas of Realism about it. But this same Reality Mr. Spencer refuses to describe in any definite manner as possessed of intelligence and personality, because it is unknown in itself. That is to say, he freely employs respecting it the language of material appearances which confessedly do not resemble it, but refuses to affirm or deny that it possesses any attribute like intelligence or personality. By what right does he make free use of the one set of terms, and reject the other set?

Mr. Spencer would probably reply, that the material manifestations of the Reality, however unlike it, are

still the special manifestations by which alone it is made known to us. It addresses us in no other way. We may, therefore, nay must, freely refer to these appearances as the forms which the Reality takes to us, though the reality itself be avowedly quite different. But, he might proceed, to ascribe intelligence and personality to the Reality, is to affirm what it is in itself, apart from its manifestations, and to do so is to say that we know what can never be known. In a word, his supposed defence would be that material appearances do not profess to be the Reality, but only certain of its effects ; whereas to speak of the Reality as a personal God, is to pretend to declare what it is in itself, and as a cause.

But is the case really thus ? Do those who ascribe intelligence and personality as well as power to the Reality behind appearances pretend that hereby they represent His very essence ? The language employed on all hands frequently implies that they do ; but how can this possibly be meant, since intelligence and personality are freely ascribed to other men, of whose essence we are notoriously ignorant ? Nay, our own nature is quite unknown to each of us in its essence, yet we possess a personal intelligence. We may well ask what we mean by these familiar names. Personality and intelligence do not designate entities which we know to be such. They are merely abstract names bestowed upon certain arbitrary groups of mental manifestations, which it seems necessary to assume in order to account for purposive acts ; and no doubt we assume, along with the manifested qualities, the power and substance, if substance there be, whose properties they are. But these mental phenomena and powers are manifested only, in the case of others, by material



changes, which are fully accounted for *scientifically* by physical causation. When, therefore, in addition to adequate physical causes for its production, we ascribe to a purposive human act, the mental cause of power guided by intention, we transcend phenomena and mere sequences, and enter the region of efficient causation.

When we ascribe conscious life to our fellows, we invest them with feelings similar to our own, solely on the ground that their bodies exhibit movements resembling our own when our bodies are actuated by feelings. Their actions show a power of adapting means to ends similar to that which we possess, and therefore we credit them with purposes, and the power to realize them, such as we find in ourselves. We know nothing of the power or reality, in them or in ourselves, which works all this. Nor have we, in their case, physical *proof* of a single mental fact. Nevertheless, the physical appearances of human bodies compel us to recognize there, not only movements, but movements guided by intelligence to destined ends. We are equally justified in arguing thus respecting nature which lies outside human bodies, or rather, respecting nature which includes human bodies, of which they are in the strictest sense parts, and very insignificant parts. Beyond, as within, human bodies (our own excepted) we witness only material phenomena, simultaneous and successive, which observe the uniformities we call natural laws, and are by them sufficiently accounted for, in a physical sense. In a deeper sense, we ascribe all these changing phenomena to an inscrutable reality, but that is not all which we do. We find in ourselves conscious intelligence, we form plans and have power to realize them, and we ascribe the same

mental characters to other bodies like our own, although it is impossible to attach them to the physical system so as to form one homogeneous scheme.

And since we find intentions far more elaborate and skilfully contrived than any of ours realized in external nature, since man himself is a part of nature, and all his projects are merged in, and are portions of, one vast and all-embracing scheme, we are *à fortiori* justified, and more than justified, we are in consistency compelled to recognize there also the high attributes of personal intelligence. In doing this, no pretence is made to reveal the essential nature of the inscrutable Reality ; but as we cannot fail to see indications of intelligence in the minor groups of physical facts called human bodies, it is impossible to disallow such indications in the stupendous ordered whole to which those groups belong.

It is true that the evidence of conscious intelligence rests ultimately on what we find in ourselves, which we extend by analogy, first to other bodies, and then to the universe ; but we must remember that each of us is to himself the centre of the world as he knows it ; and, further, that when we talk of mind in any of its aspects, we abandon the materialistic hypothesis, and recognize in its phenomena manifestations of our consciousness. So that the evidence of the material, as well as of the mental world, rests ultimately, to each of us, on our own consciousness alone, and there is nothing exceptional in the fact that our evidence of intelligence is derived ultimately from ourselves. Rather, it could not conceivably be otherwise with that or with anything, ^{sub-} nothing can be known to us except by means of a ^{re-}velation of our consciousness. Whatever we pro-manifeste of ourselves must derive its original from what

we find in ourselves; for we can never so transcend ourselves as to apprehend anything in itself, and apart from its effects on us.

Precisely, therefore, as from analogy with what we find in ourselves, we ascribe to certain limited portions of the physical system mental characters, not required for the *physical* explanation of the accompanying movements, nor to be admitted as governing those movements, *from the scientific point of view*, nor again assumed to be, or to resemble, the real essence of human minds; so likewise, finding outside human bodies vaster and more elaborate indications of purpose, of which human bodies and minds and all their relations are but minor examples, we affirm on the large scale with a still greater confidence than on the small scale, that the power is guided by intelligence to destined ends, though in saying so we by no means imagine that our search has revealed the real nature of God, or found out the Almighty to perfection.

It may be urged that, according to this very argument, our conceptions of God can have no value as true representations of Him, since they are admitted to be but enlarged projections of our own mental characters, which we can never bring into comparison with His; and that, under these circumstances, it is more reverent as well as more accurate to abstain from making any affirmations respecting Him, than to rest satisfied with such as must be extremely inadequate, if they are not altogether erroneous.

The impossibility of obtaining adequate or accurate language on conceptions respecting the Supreme Being is granted on all hands. Most true, and pre-eminently applicable here, is the saying of Goethe, that directly man puts his thought into the forms of language he is

certain to run into error. To cast the truth into any mould of definite expression used by man is to confine it within limits too narrow, and inaccurately drawn. This holds true, we have seen that it holds true, in regard to every subject to which we turn, as well as to the highest. Yet we are accustomed to speak of the Supreme Being as unsearchable in a way which implies most erroneously that the nature of other beings is intelligible to us. But a few steps taken in any direction we may choose, land us in contradictory conceptions. In this situation, what course do we take? Do we refuse to recognize anything except phenomena, because we cannot, from the nature of the case, really know what is outside us? Is this admitted inability regarded as disqualifying us from affirming or denying anything except mental appearances? Nobody entertains such a preposterous opinion. In the first place, we ascribe certain phenomena to a power not ourselves with such assurance, that we project the phenomena outside us, identify them with their cause, and call them external objects; and further, to certain groups of these we attribute personal intelligence as belonging to the power which controls their movements. Impossible as it is to associate this intelligence with external phenomena, impossible as it is to comprehend its nature or its action, we affirm it with entire confidence, assured that however far our conceptions of other minds are from the reality, they are such as that reality has excited in us, and such as it is indispensable to hold and to act upon in our relations with others. And all this Mr. Spencer maintains when he contends for the propriety of realistic language and ideas. With what consistency, then, can he object to affirm or deny that intelligence, especially since he does affirm that

power, operates in nature? If we put aside the mistaken idea that by intelligence, or personality, some definite and known reality is designated; if we bear in mind that we are quite ignorant of their real nature, and that we apprehend them only as we apprehend power, by way of inference from their effects, we shall see that we are just as much and as little entitled to recognize them, as to recognize power. Indeed, it is by no means clear that what we speak of by these names as different, are not really the same. Certainly we cannot sever the power we have at our command from our intelligence. Our power is not a separate something which our intelligence, as a distinct entity, directs. If it were, we should still have to regard our intelligence as possessed of power to control power. It seems necessary, then, to ascribe power to our intelligence, or to attribute intelligence to our power, if that way of describing the unknown recesses of our nature be preferred. In a word, we seem to be possessors of intelligent power, and the division made between them may be merely logical. However this be, it seems impossible to maintain that we are warranted in recognizing power in nature, but not warranted in recognizing intelligence, especially since it is admitted on all hands that we are warranted in recognizing both in the minor organisms of human bodies. Those who refuse to allow that the power exerted in the mighty whole of the Kosmos has been directed by intelligence, are certainly prohibited from saying that intelligence directs the activities of small portions of that whole, and such minute portions as human bodies. If it were replied that, in the case of men, intelligence is supposed simply to accompany their activities, but not to interfere with the physical

causation which determines them, the rejoinder would be, that if an intelligence which merely mirrors changes, but never controls them, is compatible with the accomplishment of human designs, it is equally compatible with the accomplishment of the vast designs of nature. But it is obvious that to suppose intelligence thus impotent, is to suppose it incapable of realizing any plans, so that their accomplishment must be in every case a mere coincidence. It is just as impossible to hold that it is so in regard to human, as to divine designs. The fact is, as we have seen, that the supremacy of physical causation is incompatible with the realization of any plans formed after that supremacy began. And hence we are brought once again to our frequently recurring alternatives, that if we uphold the reality of the materialistic hypothesis, we must disallow to man the power to accomplish a single plan, and deny to him all the boasted triumphs of his mind; while if, on the other hand, we admit the non-reality of Materialism, and open the field to human intelligence, we recognize the power of mind on the small scale, and no physical objections will touch the claim for its supremacy everywhere.

§ 17. PERSONAL ATTRIBUTES FURNISH THE WORTHIEST
MODE OF APPREHENDING THE DEITY.

It may still be said, that to ascribe personal intelligence to the Unsearchable Power revealed to the universe is to invest Him with attributes which are but exaggerations of our own qualities, and so to degrade the object of our worship by assimilating Him to ourselves. How, it may be asked, can it be reverent or fitting to describe the Unsearchable under

a form of being like our own, a form which, as conceived by us, is admitted to be not only inadequate but self-contradictory? If we could substitute nobler and truer conceptions of God for the highest we entertain now, nobody would question the fitness of doing so. But let us consider the alternatives open to our choice. Let us ask whether, by abandoning the idea of a personal Deity as involving a degrading resemblance to ourselves, we are able to obtain in exchange a more lofty conception of Him, or are shut up to representations which abase Him lower still?

It would probably be admitted that, if we had to choose between definite and known representations of being, that of personal intelligence, immeasurably exalted, is the highest and fittest which we could select. But the objection taken is to associating the Unsearchable with any known form of existence; it is contended that to do so at all is inevitably to degrade Him within limits too narrow, and erroneously drawn. So that the only alternative representation which it is necessary to consider is that which refuses to affirm or deny anything of the Supreme Being, and rests in the negative designations of the Inscrutable Reality, the Incomprehensible Power.

We must, in the first place, repeat the criticism that these designations are not nearly negative enough to meet the requirements of a refusal to affirm or deny anything about God. One expression ascribes to Him reality, which is to affirm of Him more than we can assert of anything else. The qualifying word 'inscrutable' makes the case worse instead of better, for all reality is so inscrutable as to be utterly unintelligible to us *in itself*; so that it becomes

doubly absurd to affirm of Him of whom we may not affirm anything, something which is for ever inaccessible to us, and incomprehensible by us. The other designation ascribes power to Him of whom we may not affirm anything. Hereby also, of course, the very thing is done which we are prohibited from doing, and this when the Power we ascribe is acknowledged to be incomprehensible. So that again we affirm something, the nature of which we do not understand, of Him of whom we may not affirm anything. Moreover, the terms Power and Reality, which are inconsistently excepted from the general prohibition to predicate, are made the more prominent by standing alone. We are tempted, if not invited, to regard the Unsearchable as possessed, or rather as *consisting*, of Power and Reality alone,—these being general names of two of our abstractions! To that emptiness our quest of overwhelming fulness has brought us! It might be replied, that this is not intended or implied, because the doctrine is that nothing is denied of the Unsearchable, any more than affirmed, which is to leave scope for a nature infinitely more sublime than any of our conceptions could represent. At any rate, then, we must insist on the withdrawal of the predicates Power and Reality, which, besides violating the doctrine taught, tempt us to substitute a couple of bare abstractions for this nature transcending all thought. The resort to such abstractions, plain departures from the doctrine, does in fact show that it is impracticable. If we select a term which shall have the lowest implication possible,—the Unknowable,—another word of Mr. Spencer's,—we shall find that it is beset with suggestions inconsistent with the doctrine taught. It designates a mere abstraction, and

we are forbidden to detract from its wholly negative character by a single affirmative predicate or suggestion. Reality, substantially, is then the very last thing which it is lawful to ascribe to it. We are in consistency driven, as the old philosophers saw, to absolute non-existence, pure nothing, as our fittest way of conceiving that which we may not deny to be everything!

In fact, the conception of the Unknowable which we are forbidden to form contains contradictory predicates, which mutually exclude one another. On the one hand, that conception is to be capable of admitting attributes inconceivably exalted. There may be, Mr. Spencer suggests, 'a mode of being as much transcending intelligence and will, as these transcend mechanical motion.' On the other hand, the conception must not contain a single positive element, which, because it could not transcend our ideas, must be too circumscribed and erroneous. The conception, then, is to be at once potentially fuller and loftier than any mode of Being we can imagine, but actually emptied of all definite signification whatsoever. No conception can unite these contradictory requisites. If we think away every positive notion we can form, the residuum is not a plenum of notions we cannot form, but simply a vacuum. To profess to surcharge this emptied conception with exalted inconceivabilities, is to leave it as empty as before to our thought; for directly we try to realize them, we violate our rule. Adherence to the rule means complete stagnation to our thought; the Unknowable thus apprehended must be, to us, pure nothing. The doctrine in question conducts, then, to a conception of the Unknowable which is a perfect intellectual vacuum, and is separated by an infinite

distance from 'a mode of being as much transcending 'intelligence and will, as these transcend mechanical 'motion.'

It is maintained, therefore, that to abandon all definite conceptions of the Unsearchable on the ground that our most exalted ideas must confessedly be inadequate, instead of being the course dictated by reverence and truth, is one which leads us as far as our feet can travel in a direction exactly the opposite to that in which it is admitted we should go. For it is admitted that our feeble and toilsome approaches to the Unsearchable should at least bring us to where we shall look up towards some blinding light of superior Being, immeasurably transcending our highest conceptions, and calling forth a profounder adoration than they could excite ; whereas the route we are invited to follow conducts us to a conception rigorously emptied of all significance, and bound to be kept destitute of meaning. 'Shall we call this reverence ? Or shall we call it the reverse ?' It is simply impossible that such a conception should awaken any feelings of veneration or worship. No man can pay devout homage to pure nothing. If it be said that the conception intended is rather an assemblage of exalted inconceivabilities, the reply is, that incompatible predicates cannot be united ; that what may not take any shape at all in our minds cannot be to us anything but a negation ; that sublime inconceivabilities can only be admitted by assuming some form ; and that to admit them by suffering them to assume the noblest forms we can apprehend, recognizing at the same time that these must be inadequate,—this device—the only mode of escaping from an emptiness of conception which degrades the Supreme to a nonentity—is the alternative against


which Mr. Spencer protests, but which the devout of all ages have adopted, who have not pretended thereby that they have found out the Almighty to perfection, but have judged that their highest conceptions of Being were at any rate fitter symbols to represent Him than none at all.

We have, in fact, to choose between two modes of conceiving the Unknowable, which Mr. Spencer vainly endeavours to combine. We may lay stress on the inadequacy of all our conceptions, with the logical result of refusing to affirm or deny anything respecting it, and of reducing our thought of it to a pure negation; or we may charge our conception with the most exalted characters which we can imagine, as steps and hints towards an exaltation of Being to which our thoughts can never rise. We can choose between these two methods, but we cannot unite them; we cannot elect the first, and at the same time credit ourselves with the last. Those who hold with Mr. Spencer seem to think that they can. But do they succeed?

Does Mr. Spencer's least objectionable word,—the Unknowable,—suggest to us imaginable sublimities of Being, which throw into the shade the conception of God as a transcendent personal intelligence, mighty and merciful, just and true, light and love? Nay, there is a scantiness and frigidity about the philosopher's word which needs to beg a little splendour from the Christian conception to hide its chilling emptiness. That is to say, instead of exalting our ideas of the Supreme, and suggesting 'a mode of Being as much 'transcending intelligence and will as these transcend 'mechanical motion,' our ideas of Him have been reduced to miserable destitution, expressively indicated

by the fact that *He* has become *It*. Nor can it be otherwise. If the conception is to receive any enrichment, it must be filled up with something positive, and something which we know. To heap up mere negatives would be but to make further exhibitions of its emptiness.

The kind of interpretation which is practically given to Mr. Spencer's indefinite conception is shown by the alternative expressions he employs to describe it, namely those already mentioned, Inscrutable Reality and Incomprehensible Power. It has been pointed out that these cannot consistently be used, because they contain positive elements. That they have been used shows how impossible it is to adhere to the principle of neither affirming nor denying anything respecting what has been inferred in order to account for the phenomena we witness. For we cannot do less than ascribe Power to that which is assumed to be the cause of all things, nor hesitate to call that Reality which we are compelled to imagine as underlying all shifting appearances. And yet, when we ascribe to the Unknown these most widely general characters, which seem requisite to equip it for the purposes which it is assumed in order to serve, so far from transcending intelligence and will, these characters do not import anything so high. The term Power, —standing alone, without exalting epithets like Intelligent, or Personal,—signifies to us blind mechanical force. And by Reality, when similarly unqualified, we understand the solid objectivity which we attribute (erroneously) to our external perceptions. As ordinarily understood, both are immeasurably lower than personality ; whereas Mr. Spencer, comparing his view with the conception of a personal God, maintains that



the choice is not 'between personality and something lower than personality,' but 'between personality and something higher.'¹

That this emptiness of conception tends invariably to poverty and degradation of thought in regard to its object, is seen notably in the phrase of another writer, which has been widely accepted, strange to say, as an outcome of advanced intelligence. We are enjoined to regard the Unknown as 'the stream of tendency which makes for righteousness.' Complete vacuity of thought on the subject, though alone consistent, being, of course, somewhat unsatisfactory, we are permitted to fill up the vacancy in this manner, and for this to discard the debasing anthropomorphism of a personal God. What, then, are the ideas higher than Personality which a 'stream of tendency' excites in our minds? A stream, according to Dr. Johnson, is 'anything issuing from a head, and moving forward with continuity of parts'; and a tendency is, 'direction or course towards any place, or result.' The second word does very little to enrich the first; it adds length to the expression, but hardly anything to the thought; and yet the thought might well have borne some additions. What moves forward with continuity of parts towards any place or result, suggests, of course, purely material ideas to our minds, and those of the most ordinary and unexalted kind; it is chiefly liquids which answer to the description. Of anything transcending Personality there is not a scrap or a hint. Unless it should be said, indeed, that the reference to righteousness imports this needed element. It would rather seem to make the phrase a jumble of incongruous ideas. But not to dwell upon that, righteous-

¹ *First Principles*, § 31.

ness so obviously derives its whole significance from personal relations which are prohibited as debasing, that its inadmissibility is manifest. In fact, the expression is simply a description of phenomena, which does not imply cause at all, least of all a Supreme Cause. On the whole, the conception of the Unknowable which we derive from this expression is of matter in a liquid form, so far as we may be definite (righteousness being excluded by its personal implications); and if no such definite sense is to be understood, a vacuity of thought is left far worse than if it had never been employed, because some shadowy remains of the ordinary and prosaic meaning of the words cannot but cling to them whenever they are used. This grovelling fetish is offered to us as a suggestion of the Supreme, and in exchange for a transcendent Personality, which is rejected as degrading!

It is obvious that these ways of describing or suggesting the Unknowable, so far from transcending Personality, take us down far below its most rudimentary forms; a Deity conceived simply as power, persistence, or tendency, is far lower in the scale of being, as we must measure it, than a horse or a dog; for between them and man some interchange of thought and feeling is possible, but the very idea of holding intercourse with Power, or Tendency, is absurd. If it should be contended that we have no business to rank intelligence higher than unconscious force, our faculties cannot be relied upon at all, and argument on the subject must be abandoned as impossible.

That all expressions used to describe the Unknowable, when personality is proscribed, should alternate between complete vacuity of thought and suggestions of being less exalted than our own, will be seen to be

inevitable when it is remembered that, since personal intelligence is the highest form of being of which we have any experience, or any conception, if we exclude it, our choice must necessarily be limited, either to a conception altogether negative, or to forms of being lower than Personality; and we find that those who repudiate Personality oscillate between these. A consistently negative conception,—pure and simple nothing,—besides repelling all emotions of reverence, bears on its face a character of falsity; because the conception is required and devised to correspond as cause with the most stupendous aggregate of effects,—the entire Kosmos,—and must therefore be characterized by a fulness and a potency commensurate with the mighty whole, and be the very antipodes of nothing. But the reason why we are reduced to nothing, is not at all because negation is recognized as a true symbol of the Unknowable, but only because anything positive whatsoever which is conceived must be infinitely less full and potent than is required. But, as has been already pointed out, to rest in complete negation because every idea which we can form is too limited, is not to arrive at a conception replete with ideas which we cannot form, but to land in the extreme falsity of utter vacancy of thought; for it is impossible to unite in one conception transcendent fulness and absolute nullity. Because our highest thought is not high enough, we are bidden to exchange it for one immeasurably lower.

On these grounds it is maintained, that to refuse to affirm or deny anything of the Unknown is to be led to a conception the least worthy and truthful of any; that to cover this utter nakedness of thought by resorting to wide generalities, like power or tendency,

is to suggest forms of being far lower than our own to represent Him who, it is admitted, immeasurably transcends us; and therefore, that on the very ground of His inconceivable exaltation, our fittest and truest course is to think of Him under the highest form of Being which is known to us, always bearing in mind the inadequacy of our thoughts. Even the early Jews advanced thus far, considerably further than our current philosophy; for they ascribed personality to Jehovah, and availed themselves of intercourse with Him, yet seemed to hear Him say, 'To whom, then, will ye liken me, or shall I be equal, saith the Holy One?'

There is a further reason why a merely negative conception of the Unknowable, or one suggested by wide impersonalities like power or reality, is wholly inappropriate and incompetent to set forth what has to be represented. For why does Mr. Spencer substitute, now and again, the word power for the Unknowable? He does so, surely, because what he designates the Unknowable is inferred to be the cause of the vast series of effects or phenomena which confront us. Those of them which reveal the material universe suggest a mighty whole, of which we are most insignificant parts, and which consists, to our apprehension, of matter variously moved. Movements, molar and molecular, constitute, then, the principal portion of the effects of which we regard the Unknowable as the cause. It seems not unfitting, therefore, to designate it Power, by which we understand what produces the varied mechanical effects which constitute the great changes of nature. But the word imports to us no more than a cause which tends to alter a body's natural state of rest, or of uniform motion in a straight line. This force, or cause, is never apprehended in

itself; it is an unknown something inferred from its effects, and we attribute to it only what seems necessary to account for them, and they are movements. But although this conception may satisfy the requirements of physical science, which, as we have seen, properly comprehends within its sphere the entire material frame of man and all its activities, and finds there only matter and motion, the conception is glaringly inadequate when we apply it to his mental and emotional nature.

For the case stands thus: the irresistible inference which compels us to ascribe effects to causes which are other than antecedent phenomena, postulates a cause, or causes, proportioned to the effects, but not more than proportioned to them. Now, modern science has reduced all material changes to varieties of motion. This comparative simplicity of effect begets, therefore, a corresponding simplicity in our conception of the cause, which is assumed only in order to account for the effects. We must suppose a cause adequate to produce the effects, but we have no need, and no right, and no motive, to invest it with higher or other attributes than such as seem reflected in the effects. In harmony with these considerations, our notion of Power is now more than ever simply that of mechanical energy revealed in movements. But on the very principle on which this conception of Power is framed, the principle of investing a cause with attributes strictly proportioned to its effects, it is obvious that the conception is utterly inadequate when applied to the mental and emotional nature of man. That nature, we have seen, lies outside the province of the material system, and when its adherents recognize this (but only then), they are exempted from the difficulty, the

impossibility, of accounting by mechanical conceptions for the facts of mind ; but now we are taking a wider range, we are discussing what conception we should form of the Supreme Cause of all: and to us thought and feeling are the primary and most fundamental, as well as the most exalted, of the facts which confront us. We are bound, therefore, in virtue of the inference which compels us to seek a cause at all, and in compliance with the principle on which our conception of mechanical force has been framed, to invest our conception of the Supreme Cause with attributes which, at the very lowest, shall be proportioned to the highest mental and moral endowments of man. Where the effects are simply movements, we assume, for that reason, only energy of motion in the cause ; where the effects are elaborate intelligence and exalted emotions, we are bound, for that reason, to ascribe to the cause characters which correspond to those transcendent results. If we fail to do so we abandon the principle which governs our conception of cause at all. And if we abstain from ascribing any positive characters to the Supreme Cause, on the ground that none which are conceivable by us can be adequate, we are landed, as we have lately seen, in a mental void which, in virtue of the considerations now urged, is removed from the truth by the whole distance which separates utter vacancy from infinite fulness.

It has just been said that the conception of mechanical force as cause is adequate to the requirements of the physical system, which presents us only with movements. In a certain sense that is true, but in a far deeper sense it is not true. It is true that, in order to effect a certain movement, it seems sufficient line. a proportionate amount of mechanical energy

should operate in a particular direction ; and it is in virtue of this consideration, applied to all movements, that science postulates a blind mechanical force operating in external nature, and postulates no more. But this is to neglect, and to leave unaccounted for, the special and astonishing directions taken by this energy, presumed to be blind. For it is not the energy simply, but the energy guided into such and such channels, which produces the Kosmos, which would else be a chaos. Now, it may fairly be contended that the very same argument which compels us to recognize cause at all, and which leads physicists to believe in invisible mechanical energy, will oblige us to go further, and acknowledge that the ordering of that energy in such ways as to produce the vast aggregate of purposive results which constitute the universe, presupposes in the cause capacity to plan these results beforehand, and to administer the energy so as to accomplish them. For it must be remembered (and this seems constantly forgotten), that when we recognize even mechanical energy, we transcend phenomena, and admit the principle that we must seek their real causes behind them. But we have no right to admit that principle up to the point of acknowledging blind mechanical energy, and to reject it when we are asked, in obedience to it, to acknowledge a cause adequate to account for the purposive character which is stamped on ten thousand phenomena of nature, and preeminently on the Kosmos viewed as a whole.

And if this consideration compels us to ascribe to the Cause of the merely material universe attributes of transcendent intelligence as well as of power, much more are we compelled, by the principle which governs our conception of cause, to invest the cause of man's

intellectual and emotional nature with characters, at the very lowest, commensurate with those he possesses. It is not, of course, pretended that, in our admitted ignorance of cause, we are warranted in affirming absolutely what attributes are, and what are not, requisite to the production of certain effects; but unless we are to abandon our notion of cause altogether, and with it our conception of mechanical force, we must read in effects some indications of the characters of their causes, and must hence argue from the mental and spiritual nature of man, that his Maker has attributes at least related to and cognizant of his own. We have said 'at the least' and 'the lowest,' as if we were contending, so to speak, for the minimum of exaltation to be ascribed to the Supreme. But no limitation in this direction need harass us, since the objection raised—at least on the part of Mr. Spencer—against ascribing intelligence to the Unknown, is that our highest conception of intelligence must be altogether unworthy. 'The choice,' he says, 'is between personality and something higher.' In saying so, he admits the principle for which we contend, that we must invest a cause with attributes having some proportion to its effects. It is because the Kosmos is such a transcendent aggregate of effects, that he declares no conception we are able to form of its cause can be adequate, a conclusion in which almost every one will agree with him. But if it be held, for the reasons lately urged, that we obtain our fittest apprehension of Him whom, it is allowed, we cannot worthily conceive, by thinking of Him under the highest forms of being which are known to us, rather than by leaving our thought of Him a blank, then, finding among the works of His hands men endowed with

intellect and with moral and spiritual feelings, we must ascribe to their Maker attributes bearing some relation to those lofty characters; lower they cannot be, but they may be immeasurably higher; and we think our truest thought respecting Him, when we take our noblest conceptions of intellectual greatness and moral excellence as suggestions of His unapproachable exaltation.

§ 18. THE DIVINE PERSONALITY AND THE SENSE OF DUTY.

Since it is the common aim of those who take different sides in this controversy—at least, if we regard Mr. Spencer as representing one side—to obtain the highest possible conception of the Unknown, those who contend for the sublimest positive notion we can form may urge on behalf of their view, that it possesses great practical advantages which are altogether lost if we adopt a purely negative conception. For it permits and encourages a sense of responsibility to the Unsearchable Being who placed us here, and opens a possibility of intercourse with Him, both of which are considerations of a most powerful and ennobling kind, and neither of which can have place if we may not affirm or deny anything of the Unknown. The feeling of duty certainly derives its highest sanction from, and fails, as Mr. Sidgwick's careful reasonings seem to show, to receive any conclusive sanction apart from, the will of a righteous Ruler, who can make good prevail in the universe, and punish violations of it. But the ideas connected with righteousness and morality depend, mainly, among men as elsewhere, on the relations of persons to each other. Reject the notion of personality—which is confessedly

obscure, when deeply considered—recognize only phenomena, coexistent and sequent, as many are bidding us do now, and ideas of right and wrong cease to have any place or application whatever, the whole set of considerations which they involve is swept away. If it be said, ‘Well, that being granted, since we have no *proof* that the Unknown is a person, we have no proof that we stand in any moral relations to Him, or to it; that we do, is but a possible supposition borrowed from our relations to our fellowmen:’ I answer, we are equally destitute of *proof* when we ascribe personality to our fellows, and the moral relations in which we stand with them rest on no firmer footing than may be claimed for our moral relations to the Supreme. If we confine ourselves to phenomena, we have no longer any right to talk about personality or morality, and we ought to banish them from our vocabulary, and from our thought, as well as from our philosophy. The fact is, of course, that we cannot possibly dispense with them and the ideas they involve; they are facts of the fullest significance, and the first importance, in our practical life; and any philosophy which assigns them a lower position, and especially any philosophy which leaves no room for them at all, is self-condemned. If we do not hesitate to ascribe personality to our fellows, if we insist upon our rights and protest against wrong, we must find a place for these ideas in our philosophy proportioned to their prominence in our life; and the same arguments which justify the high place they hold in our dealings with men, will entitle them to equal recognition as governing our relations with the Unsearchable, if we are to ascribe to Him the highest attributes we are able to conceive. But the argument pursued in these pages will show,

that to attempt to find, or introduce, facts of this order in the physical system is an entirely mistaken endeavour. They will never be discovered in it, nor combined with it, and yet recognize them we must. The conclusion is, that that system, which holds good of phenomena and is supreme over them, is true only within their limits, and is wholly incommensurable with facts beyond those limits, which yet we cannot refuse to recognize without destroying the chief significance of our life.

The powerful and much-needed influence exerted on the individual mind by the recognition of responsibility to a righteous and all-seeing and almighty Ruler, who is cognizant of the inner as well as the outward life, and to whom allegiance is owed for all, will hardly be called in question. We may trace it in the moral elevation of those who have conspicuously yielded to it, and not less in the moral degradation and recklessness of multitudes who have rejected the restraint. Of course, no practical benefits resulting from the conviction that we are responsible to a righteous God, would prove that He possesses moral attributes; but, since it is admitted that we ought to seek the highest possible conception of the Most High, it may fairly be argued, that to recognize in Him attributes which exert this great and ennobling influence upon character is to exalt Him far higher in our thought than to abstain from ascribing to Him any attributes at all, which is to sacrifice altogether the sublime influence of His moral authority over us.

No doubt it is true, that if we are to infer the moral attributes of the Supreme Being from the facts of the world, taken altogether, and taken alone, we cannot shut out of view the perplexing facts of evil,

which lie on every hand side by side with good ; and since it would be a contradiction to suppose that such opposite attributes coexist in one Being, it might seem that we are pointed to a Dualistic theory. But not to dwell on the fact that the highest positive conception of God is derived, not simply from the world, but from teachings delivered by those who declared they had special authority to utter them (which teachings, however, may more properly be classed among the facts of the world), it is sufficient to say, without entering on the discussion of Dualism, that although some modern as well as ancient writers have contended for that theory, the great majority of thinkers of all schools have rejected it.

§ 19. THE NEGATIVE CONCEPTION OF THE DEITY
INCOMPATIBLE WITH RELIGIOUS WORSHIP.

A similar argument may be urged respecting the possibility of intercourse with the Unsearchable. Of course, there can be none, if our conception of His nature is to remain a perfect blank. We may not affirm this, if we may not affirm anything, respecting Him. True, we are equally forbidden to deny the possibility of such intercourse ; confessedly, then, it may be within our reach, with all its stimulus and consolation ; but we are as completely disqualified from profiting by and enjoying it, as if it were known to be impossible. Is the practical advantage thus sacrificed a slight one ? Those only will think so who have never held themselves privileged to seek such intercourse. Beyond question, it is the most powerful factor in the inner life of those who share it, or, if you will, who are persuaded that they share it. From the

nature of the case, it cannot fail to be this. Every aspiring mind derives great stimulus and aid from companionship with human genius and excellence, which is close upon his own level compared with the transcendent intelligence which he sees displayed in the universe, and with the moral perfections which his instructed nature ascribes to the God of righteousness and love. And yet the most intimate friends know little of each other, and communicate imperfectly, if we measure their intercourse against that which may take place with Him who, inhabiting eternity, dwells also in the reverent soul, and communes with it as a father with a child. As intercourse with those who are intellectually and morally above us tends to develop and exalt our minds, so, but in a far higher degree, must fellowship with God be elevating if it be possible to man. And if it be not possible, and man has no superior to whom he can look up, one principal means of elevation is denied to him, and denied most completely to those who stand highest among their fellows.

And according to the negative conception we are opposing, men are to be prohibited from seeking this transcendent education, not because it is unattainable, for it is admitted that it may be within reach, but because the possibility of it is among the propositions concerning the Unknown which, though they cannot be denied, may not be affirmed. On the score of that 'perhaps not' man is to abandon the most exalted privilege he can conceive. And it is maintained that this abstinence from all predication is necessary for the due exaltation of our conception of the Unknown. We must not think of God as our Example, Leader, Refuge, Father, nor permit our natures to grow up

under these purifying and ennobling beliefs, because to do so would be to lower Him unworthily ! Only a mental void, we are told, is sufficiently exalted to represent Him, at least to a scientific mind.

It is granted, as before, that no practical benefits to be derived from intercourse with God would prove the possibility of it, but the question at present is whether a positive or negative conception of the Unknown is the highest which we can obtain ; and the sublime and powerful influence exerted upon character by the persuasion that we may commune in secret with the All-seeing and the All-pure, goes far to settle that question. For how can the conception of a Sublime Intelligence, who compasses our path and our lying down, and is acquainted with all our ways, who understands our very thought afar off, and from whom neither distance nor darkness can hide, yet who remembers that we are dust, and like as a father pitieth his children, so pities them that fear Him,—how can such a conception be compared for one moment, in majesty or impressiveness, with a mental vacancy which occasionally clothes its nakedness with such illegitimate material suggestions as a Stream or a Force ? There cannot be two opinions as to which of these representations is the higher. But if, nevertheless, the negative conception is to be chosen, see the predicament in which we are placed : it is allowed that the highest conception which we can form of the Unknown is the truest, because even that is not sufficiently exalted to represent Him ; ‘the choice,’ Mr. Spencer tells us, ‘is between personality and something higher,’ and yet, of the two conceptions before us, we choose the lower as being the truer.

It is surprising that so little account has been taken

in this controversy of the exaltation which the thought of God receives from regarding Him as accessible in prayer and worship. Not only is the mind hereby frequently exercised, and stimulated to its highest efforts, in contemplation of Him, but the emotions are called forth to expend upon Him their noblest treasures of feeling, as enjoined in 'the first and great commandment' of Judaism and Christianity, 'Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind.' Every higher faculty is to contribute its best to the supreme act of adoration. Here, then, is the whole nature occupied and on the stretch as it seeks to approach, and love, and worship the Most High, while yet the reverence which refuses to associate Him with any definite form proclaims and guards His inconceivability. But to abstain from all affirmation concerning Him is to freeze and deaden feeling as completely as it is to paralyze thought. The negative conception conducts to utter stagnation and insensibility; the positive kindles 'heart, and soul, and mind,' into their very highest activities. These consequences must be strangely forgotten by those who accept the negative conception, without hesitating a moment at the sacrifices it involves. It is impossible that those who have been accustomed to a conception of God enriched with all the best wealth of thought and feeling, and who have found it to be the noblest influence in their life, should surrender it in exchange for an utterly barren and deadening conception; and the absurdity reaches its climax when they are bidden to do so by way of exalting their idea of the Most High, and with the assurance that the choice lies 'between Personality and something higher.'

If this objection be met by scepticism as to the exalted character and influence of the positive conception, the claim must be made which scientists properly make when outsiders presume to discuss the details of their peculiar departments of knowledge. It is impossible, they contend, for those who have not undergone a long training in a particular science to possess such an acquaintance with it as would alone qualify them to judge of it. It is equally true that those only who have known by considerable experience how the thought of God as an Almighty and Merciful Father, leading, supporting, and purifying the child who seeks to be thus led, comes home to the spirit in its changing moods and circumstances, and fortifies and exalts it under all—only they can measure the power and value of this influence; and outsiders are exactly as incompetent to estimate it as the uninitiated are to pronounce upon questions of anatomy or law, and for the same obvious reason. Yet scientists who rigidly guard their own '*peculium*,' often pronounce on this subject, with which they refuse to become familiar, with the freedom characteristic of ignorance.

§ 20. THE RELATIVE REALITY AND RELIABILITY OF OUR
KNOWLEDGE OF THE SUPREME.

But no practical advantages derived from the positive conception of the Supreme would avail, if the negative conception were sustained by preponderating evidence. Does reason enjoin us to invest the Most High with the most exalted attributes we can imagine, which are those of a transcendent intelligence? or does she, pronouncing on the whole evidence, command us to reject all definite conceptions respecting the Un-

known? The answer to these questions has been already indicated in the preceding pages. If the question were as to our competence to apprehend the real essence of the Most High, I suppose there is no one who would pretend that such a finding out of the Unsearchable is possible to man. Yet the arguments urged against the positive conception seem to be directed against this confessed impossibility. The real question before us is a different one. It is, whether our admitted inability to obtain absolute knowledge of God shuts us out from all definite and reliable conceptions respecting Him? If it does, then, to maintain our consistency, we must certainly abandon all definite conceptions of human minds as well, for we stand on precisely the same footing of ignorance respecting their essential nature.

It is one of the commonplaces of philosophy that we cannot know anything in itself, but only the effects which it produces upon us. Those effects are its modes of manifestation to us; and though they do not fully reveal its inner nature, they owe their character to the action of that nature upon our own. But although our knowledge of everything external is necessarily thus mediate and limited, we believe in a world outside us, and properly ascribe to its effects on us a reliable, though a relative character. They are the language by which it uniformly speaks to us, and its nature, relatively to us, is truly made known thereby. We do not refuse to ascribe these effects to the world outside us, because they do not reveal its nature absolutely. Then why, when the Unsearchable God reveals Himself marvellously through the universe of matter and mind, in human history, and in moral and spiritual disclosures, should we refuse to affirm or deny

anything concerning Him, because all these revelations, as apprehended by us, are necessarily cast in the mould of our minds? Mr. Spencer might reply, that he does not refuse to affirm and deny freely respecting the manifestations of the Unknown, that he asserts for them 'a relative reality,' and that it is only the unknown in itself of which he refuses to predicate anything. But Mr. Spencer himself goes further than this. He speaks, in the *Principles of Psychology*,¹ not only of *effects* (movements and feelings) as symbols of the Unknown Reality, but also of 'the concept we form to ourselves of matter,' and of 'the substance of mind,' as symbols of 'something that can never be rendered into thought.' That is to say, he recognizes the legitimacy of our conceptions of matter and mind, and of the distinctive characters we assign them, although they are neither phenomena nor realities, but inferences from phenomena, and symbolic of realities. To minds, therefore, as well as to feelings, he ascribes a 'relative reality'; in other words, he hesitates not to affirm something of what is neither a phenomenon, nor the actual reality manifested in phenomena. In addition to them, he admits that mind may be spoken of though not known in itself, and only inferred from certain effects on us. And it was shown (page 367) that we are obliged to make use of many other conceptions, which proclaim by their inconsistencies that they cannot be absolutely true, and which yet we cannot, on that account, refuse to accept as relatively true, without depriving our life of its significance. Such are the permanence of our own minds and characters, and of the minds and characters of others. Those of others are revealed to us exclusively through material mani-

¹ Vol. I., § 63.

festations, which are fully accounted for physically by mechanical and chemical laws. And yet we do not hesitate to ascribe to the physical organisms of others mental qualities, attributes of a permanent something we call their minds; and we say generally that their organisms are under the guidance of intelligence, although every single act which they perform receives a full physical explanation from physical laws. This is a necessary conception of reason, obtained by inference or conclusion, to which no corresponding object can be discovered in the world of sense; in the phraseology of Kant, it is a *transcendental idea*. Of the real nature of this mental something, we do not pretend to have any knowledge, and it is revealed to us exclusively through physical phenomena; and yet no philosopher hesitates to affirm and deny respecting it. We do not, indeed, predicate respecting its essence, but we freely ascribe to it intellectual and moral character. For practical purposes we must do so; experience justifies and compels us, true though it be, that the only phenomena through which these transcendent facts address us are physical changes.

In view of these facts, what answer must be given to the question before us—whether our admitted inability to obtain absolute knowledge of God shuts us out from all definite and reliable conceptions respecting Him? It seems undeniable that the arguments which are urged against all such conceptions avail with equal force against affirming or denying anything concerning the minds and character of men. Their essence likewise we can never know; they, too, are revealed to us only through physical manifestations; and unquestionably philosophical scepticism concerning them cannot be formally refuted. But attempt to act out this

sceptical conclusion, and banish from language and thought all notions of human intelligence and morality, and the thing is simply impossible ; however theoretically doubtful, the ordinary conceptions of man's nature are practically indispensable. And the proper inference to draw is, not that conclusions practically necessary are false, but that we cannot obtain philosophical demonstration of much which is true.

And since we are compelled to take this course in regard to the mental and moral qualities of men, by what right can we decline to take it in regard to the attributes of God ? His essential nature is confessedly unknowable ; but He is not, like our fellow-men, revealed to us only through physical manifestations, for He is the Cause, the Author, of our intellectual and spiritual nature, as well as of material phenomena ; and the same reasoning which compels us to ascribe these phenomena to a cause capable of producing movements, and ordered movements, requires us to attribute to the cause of our intellectual and spiritual nature qualities at the lowest commensurate with that ; lower they cannot be, though they may be immeasurably higher. The alternative of the negative conception conduces, as we have seen, to a conception immeasurably lower, and therefore less true. It would seem that God could not have revealed Himself to us in higher forms except by bestowing on us natures proportionately higher ; and though it follows—and we should ever bear in mind—that our knowledge of Him is but relative, we cannot regard it as erroneous, in the sense of untrustworthy, without ascribing to Him an indifference to truth wholly inconsistent with what He has taught us to regard as the noblest attribute. He would thereby reveal Himself as profoundly immoral,

and more degraded than many of His creatures. The supposition would be at variance, therefore, with the conclusion that He must be immeasurably more exalted than we. Thus, on the ground, not certainly of philosophical demonstration, but of practical certainty and assurance as reliable as we have for most of our convictions, we are justified in ascribing to the Unsearchable Cause of the Universe attributes most truly suggested to us by the highest effects which are manifested there. The nature which He has given to us determines the forms in which alone He can reveal Himself to us ; and though it may well be that He possesses other and higher attributes, these will not falsify, however much they excel, the conceptions which He has enabled us and taught us to entertain of Him. For those conceptions owe their character to the action of His nature upon our own, precisely as our conceptions of other minds do. His nature addresses us in that way, in virtue of what He is and we are, and therefore, relatively to us, it is truly made known.

Mr. Spencer may contend that the considerations which have been urged in favour of a positive conception of the Unknown have been sufficiently recognized by him, for after reaching and defending the conclusion that we are not competent to affirm or deny anything about it, he goes on to allow :—

‘ Very likely there will ever remain a need to give
 ‘ shape to that indefinite sense of an ultimate existence,
 ‘ which forms the basis of our intelligence. We shall
 ‘ always be under the necessity of contemplating it as
 ‘ *some* mode of being ; that is, of representing it to
 ‘ ourselves in *some* form of thought, however vague.
 ‘ And we shall not err in doing this so long as we

'treat every notion we thus frame as merely a symbol, utterly without resemblance to that for which it stands.'¹

He proceeds to argue that 'forms of religion, like forms of government, must be fit for those who live under them. . . . As certainly as a barbarous race needs a harsh terrestrial rule, . . . so certainly does such a race need a belief in a celestial rule that is similarly harsh. . . . Speaking generally, the religion current in each age and among each people has been as near an approximation to the truth as it was then and there possible for them to receive.'² There is some truth in this consideration; but if we apply the standard to our own time, we shall be driven to form a very low estimate of an age whose conceptions of Deity are expressed by ideas so much lower than personality as a 'stream of tendency,' or a 'force.'

Mr. Spencer continues:—

'Few, if any, are as yet fitted wholly to dispense with such conceptions as are current. The highest abstractions take so great a mental power to realize with any vividness, and are so inoperative upon conduct unless they are vividly realized, that their regulative effects must for a long period to come be appreciable on but a small minority.'³

And lastly, Mr. Spencer states and meets an objection:—

'These admissions will perhaps be held to imply, that the current theology should be passively accepted; or, at any rate, should not be actively opposed. "Why," it may be asked, "if all creeds have an average fitness to their times and places, should we not rest content with that to which we

¹ *First Principles*, § 31. ² *Ibid.*, § 32. ³ *Ibid.*

'are born? If the established belief contains an 'essential truth—if the forms under which it presents this truth, though intrinsically bad, are extrinsically good—if the abolition of these forms 'would be at present detrimental to the great 'majority—nay, if there are scarcely any to whom 'the ultimate and most abstract belief can furnish 'an adequate rule of life—surely it is wrong, for 'the present at least, to propagate this ultimate and 'most abstract belief.'"¹

Mr. Spencer replies that—

'While it is requisite that free play should be 'given to conservative thought and action, progressive thought and action must also have free play. 'Without the agency of both, there cannot be those 'continual readaptations which orderly progress demands.'

He charges each advanced thinker to 'consider 'himself as one of the myriad agencies through 'whom works the Unknown Cause;' and to conclude that 'when the Unknown Cause produces in him a 'certain belief, he is thereby authorized to profess 'and act out that belief.'² But to conceive of the Unknown Cause as bestowing, and authorizing the utterance of, a truth, is surely too definite, too personal an idea, for one of 'the small minority' who recognize the falsity of all positive conceptions.

It might appear from these passages that the disputants in this controversy are pretty much agreed after all; for both acknowledge the inadequacy of all positive conceptions of God, and both acknowledge the necessity of employing them; Mr. Spencer

¹ *Ibid.*, § 34.

² *Ibid.*

only exempting from this necessity 'a small minority' of advanced minds, who, because they recognize the inadequacy of such conceptions, are permitted to substitute for them 'the highest abstractions.' But the divergence of opinion goes deeper than this. For if all who recognize the inadequacy of our conceptions of God are, on that ground, to exchange them for 'the highest abstractions,' as, according to Mr. Spencer, they ought, a large majority of Christian people must do so, since it is no discovery of recent thinkers, confined to an initiated few, but one of the commonplaces of Bible teaching, expressed in the Old Testament as clearly as in the New, that 'God is great, and we know Him not.'

And it has been well pointed out by a recent writer that the free ascription to God in the Scriptures of varied and mutually inconsistent characters of external nature and human emotions is not only evidence that the inadequacy of any conception of Him was fully recognized by the writers, but is a preservative against the dangers of a uniform and narrow representation. To the objection that certain Scripture passages ascribe to God contrary qualities and dispositions, he replies:--

'These daring contradictions are the very safeguard against that impure and anthropomorphic Theism of which the inspired writers are accused. The real anthropomorphism consists in setting up an ideal which is consistent according to a human standard. The Scriptures take everything that is grand and beautiful, in the world without and in the world within, in the firmament or in the heart, and fuse them together into one glorious image of God. Attempt to ascribe them all to a human

'being, and they will be mutually destructive; but
'in God the realities of which they are the reflec-
'tions may subsist in one essential harmony. It is
'precisely because the Scriptures are not really
'anthropomorphic that they venture on such bold
'flights of apparent anthropomorphism. They illus-
'trate the Divine nature in the only way in which
'it can be illustrated—by human analogies; and then
'immediately add . . . "For my thoughts are not
'your thoughts, neither are your ways my ways,
'saith the Lord. For as the heavens are higher
'than the earth, so are my ways higher than your
'ways, and my thoughts than your thoughts.'"¹

The controversy in question is not, therefore, whether it is fitting for those to entertain positive conceptions of God who regard them as adequate (Mr. Spencer's account of the current theology as resembling, in its literal representations of God, the notions which savages form of their deities, does injustice to the prominence it gives, and enjoins on all to give, to the divine incomprehensibility); but the point in dispute is, whether those who fully recognize the inadequacy of man's most exalted thoughts of God should yet cherish those thoughts as the worthiest and truest suggestions of Him which they can obtain, or should abandon them for 'the highest,' that is, as we have seen, the emptiest 'abstractions.'

The word 'Father,' for example, gives the representation of God characteristic of Christianity which expatiates with all freedom and confidence in its

¹ *The Boyle Lectures on Christianity and Morality* by Professor Wace, pp. 65, 66.

rich and attractive significance, including the pledge of immortality:—

‘As many as are led by the Spirit of God, they are the sons of God. For ye have not received the spirit of bondage again to fear; but ye have received the spirit of adoption, whereby we cry, Abba, Father. The Spirit itself beareth witness with our spirit, that we are the children of God. And if children, then heirs; heirs of God.’¹

The Scriptures themselves teach indeed—what, from the nature of the case, is sufficiently obvious—that this prized and chosen word fails to give a complete or adequate idea of God in His relation to man. It sets forth that relation by means of a human analogy, which, because human, carries on its face its utter insufficiency, and in many respects its inaccuracy; and other words freely employed in Scripture, such as Maker, King, Judge, I AM, proclaim and supplement, in some degree, its defects. Mr. Spencer’s inference would be, since the word is inadequate, abandon it, and with it, all its implications. They are not absolutely true, and therefore they cannot be relied upon.

But from just such a recognition of the inadequacy of this and every other human conception of God, the Scripture writers, and most thoughtful minds in the past, have drawn a different inference, which may be expressed thus: Since the transcendent revelations of God in the worlds of matter and mind compel us, if we conceive of their cause at all, to invest Him with attributes proportioned to these stupendous effects, our highest ideas of Him, being necessarily bounded by our poor powers of thought, will be far too poor

¹ Rom. viii. 14-17.

and too low. Still, if they are the richest and noblest our minds can form, they will be truer than conceptions less rich and noble, and truer beyond measure than conceptions which are mere blanks. God's power of revealing Himself to us is determined and limited, so to speak, by the natures which He has given us; but though our ideas of Him bear, in consequence, the stamp of inadequacy, they bear likewise the stamp of relative reality and truth, unless, indeed, we suppose that He misleads us by His revelations, to suppose which is to degrade Him far lower than ourselves. And the refusal to rely on 'relative reality' in this supreme instance comes ill from a philosopher who contends strongly for the free employment of realistic conceptions and language generally, qualified only by a recognition of their relative character, which is freely accorded on all hands in the case before us. In fact, those who uphold a positive conception of God, subject to the acknowledgment of its inadequacy, take the same course which Mr. Spencer adopts and prescribes, not merely in regard to phenomena, but also in regard to many practically indispensable conceptions which, like the idea of God, we derive from them.

§ 21. THE CHRISTIAN CONCEPTION OF THE DIVINE BEING.

But while it is true that, if we recognize a cause of the universe at all, we must suppose its Author at least capable of apprehending and responding to the highest characters manifested there—capable, therefore, of apprehending and responding to the trust and love which arise out of the fatherly relation; it is true, also, that the evil and suffering and death to which we are subject, and the veil of concealment behind which our

Maker shrouds Himself from us, would, if He revealed Himself no further, leave it doubtful, perhaps more than doubtful, whether He would avail Himself of this capability, and permit us to regard Him, and confide in Him, as a Father. As a matter of fact, we find that the highest minds, so long as they had only the worlds of nature and man before them, never distinctly reached, to say nothing of relied on, the conception of God as a Father. It was reserved for One who claimed to have come from God, and to be God, to maintain the truth and unfold the wealth of that conception, and to bid and to persuade the sorrowful and the sinful to confide in it. And if His claim was authentic, then certainly His acquaintance with sorrow, and unbounded self-sacrifice as God in human form, was a transcendent exhibition and proof of the Divine Fatherhood, such as could never have been derived from the world. 'Philip saith unto Him, Lord, shew us the Father, and it sufficeth us. Jesus saith unto him, . . . he that hath seen Me hath seen the Father.'¹

And deeply involved in this conception of God's Fatherhood was the promise—of supreme interest to mortal men—of eternal life in the Father's house for all who would become His children, a promise given by the same Teacher as by one 'having authority' to make it. 'Ye believe in God, believe also in Me.' In regard to this likewise, though there is nothing in our present situation to prohibit the supposition, and much to support, as well as to endear it, yet, in the absence of special evidence, it never could, it never has, become an assured conviction.

This is not the place to estimate the claims of Him by whose authoritative words and deeds thousands of

¹ John xiv. 8-9.

the many succeeding generations have confided in God as their Father, and advanced to the inheritance on high. The evidence for them, from the nature of the case, not demonstrative, but various and congruous, sustains and justifies His claims quite as well as many of the equally undemonstrable convictions mentioned in these pages are justified, which science quietly assumes. All alike depend on evidence of which reason must be judge. But just as many of the convictions which have been discussed, though far from criticism-proof, are yet practically indispensable, so such exalting and inspiring revelations as were made by Jesus Christ are requisite to unfold and satisfy man's spiritual nature, to rescue him from evil, and to assure his title to be a child of God and an heir of immortality. The fact that man aspires after God and immortality is, of course, no proof of either ; and yet it is an element of proof, if his life and nature are quite mutilated and incomplete without them.

. Shall he

 Who loved, who suffered countless ills,
 Who battled for the true, the just,
 Be blown about the desert dust,
 Or seal'd within the iron hills ?
 No more ? A monster then, a dream,
 A discord. —*In Memoriam, LVI.*

And it is another element of importance in the case if He who claims to bring Divine assurance on these matters exceeds the thoughts of all in the sublimity of His disclosures, and in the majesty and sympathy and lowliness of His character. And thus it is with Him who, blending the Divine and human natures in His own, a sufferer with man and for him, bids him, and enables him, to rise and be a partaker of the Divine

nature, and stands forward as the Redeemer of the world, leading a multitude which no man can number to victory over sin and sorrow and death. The evidence which justifies such claims need, indeed, be great ; but they possess at any rate an elevation and a breadth commensurate with the subject, and give boundless scope to the highest aspirations of man. From the position which He fills arises, with all naturalness, a scene like this : ‘ I beheld, and lo, a ‘ great multitude which no man could number, of all ‘ nations, and kindreds, and people, and tongues, stood ‘ before the throne, and before the Lamb, clothed with ‘ white robes, and palms in their hands.’ And He calls forth as naturally words like these : ‘ I am persuaded that neither death, nor life, nor angels, nor ‘ principalities, nor powers, nor things present, nor ‘ things to come, nor height, nor depth, nor any other ‘ creature, shall be able to separate us from the love of ‘ God, which is in Christ Jesus our Lord.’ Such language and ideas, a personal influence of this order, bearing on and quickening the individual soul, might almost seem to dazzle and compel reason ; but will she not correctly judge that the majesty and fulness of this series of conceptions are powerful evidence that they come from Him whom our highest ideas are too low to represent ? It may be confidently said that the supreme influence of Jesus Christ, sustained by a faultless life, and by a death even more significant, will be supplanted only by a teacher, or a system, presenting claims more noble, or more consistently sustained, and will never be supplanted by negative conceptions of God ; and this, not only because of their forbidding poverty, but because of their evident untruth, since that poverty is in the most complete contrast with the

fulness of the world, and the glory possible even to human nature.

It is a fact in significant accordance with the acknowledged unsearchableness of God that the New Testament shadows forth His nature as so far transcending personality as known to us, that its unintelligibility has been constantly made an objection. We are instructed there to conceive of the one God as the Father, the Son, and the Holy Spirit—a conception which at least gives enlarged significance to our thought of the Most High; for it proclaims Him to be a Being, the fulness of whose nature, nay, the fulness of whose relations even to us, it requires a threefold personality to indicate. This ‘fulness of God,’ guarded by its incomprehensibility from being narrowed within the limits of any rigid conception, is meant to bear with its weight and wealth of meaning on the soul of man, who is bidden to prepare his heart by reverence as a dwelling-place for Him who ‘inhabiteth eternity.’

All admit that we cannot represent to thought a unity of intelligent Being embracing distinctions and inter-relations such as the different designations, of Father, Son, and Spirit import. Nor can those names, at least Father and Son, be used in this high connection in the same sense in which they are employed among men. As applied, and both applied, to the one God, they proclaim their own inadequacy. Yet when we take them as symbolizing real distinctions in His nature, we only do what we do in the case of all our conceptions of realities—treat them as signs of what we cannot know in itself, but which, for all that, are the best, that is to say the truest, representations of the realities

which we can form, representations which we cannot do without.

And in this case, we are instructed to think of the Divine nature as differing from our own in the direction of an extension and complexity of personalities which yet does not sacrifice unity. The representation quite baffles our comprehension, and has been opposed from early times on that ground; but this objection at least cannot be urged by those who refuse to ascribe personality to God because that does not transcend our intelligence, but supposes that His Being is cast in the mould of our own. In fact, these objections, to a certain extent, neutralize each other. The Christian conception of God is not open to the charge that it reduces God's nature to the narrow limits of our own; because, besides laying stress on His unsearchableness, it ascribes to Him a triune nature, confessedly incomprehensible, and for which the Christian Church has had to wage continual controversy on the very ground that it transcends our intelligence. In other words, Christianity has all along contended for a conception of God conforming to what is true in the conclusion—(ancient as well as modern),—that His nature must transcend our own; while, instead of offering us the chilling and degrading substitute of an empty notion, it shadows forth to us an enrichment and a fulness of Being surpassing personality as we know it, and involving high inter-relations of which we have no experience. These are suggested, indeed, in the only way they could be, in the way which is to us the truest, if we are to think on the subject at all, by language drawn from human analogies; language, therefore, which proclaims its own inadequacy,

and which no more pretends to describe the essence of the Divine Being, as, by a curious misapprehension, some philosophers have supposed, than the language in which we speak of each other pretends to set forth each other's essence. But in the one case as in the other, practical necessities justify and compel reliance on conceptions confessedly relative, but which have been *made what they are by the realities they symbolize*.

§ 22. CONCLUSION.

And now, to draw this lengthened argument to a close, evidence has poured in upon us from many sides that we cannot refuse to transcend the phenomena which alone confront us in consciousness. Science, indeed, properly regards phenomena and their coexistences and successions as constituting the special sphere of her investigations; and because this is her peculiar province, and the sequences of phenomena, which she calls physical causation, confirm her declarations, by their regular recurrence, many of her advocates proclaim that she assumes and admits nothing but phenomena, and that the continual verification of her statements respecting them is a sufficient guarantee of their truth against all metaphysical doubts. This seems to be the contention of Positivism, and of many who do not rank as followers of Comte. No language could be stronger than that in which he excludes from consideration—in the positive stage of philosophy—everything except phenomena and their relations to each other. His words are:—

‘ Le caractère fondamental de la philosophie positive

'est de regarder tous les phénomènes comme assujettis
 'à des *lois* naturelles invariables, dont la decouverte
 'précise et la reduction au moindre nombre possible
 'sont le but de tous nos efforts, en considerant
 'comme absolument inaccessible et vide de sens pour
 'nous la recherche de ce qu'on appelle les *causes*,
 'soit premières soit finales. . . Chacun sait, en
 'effet, que, dans nos explications positives, même les
 'plus parfaites, nous n'avons nullement la prétention
 'd'exposer les *causes* génératrices des phénomènes,
 'puisque nous ne ferions jamais alors que reculer la
 'difficulté, mais seulement d'analyser avec exacti-
 'tude les circonstances de leur production, et de les
 'rattacher les unes aux autres par des relations
 'normales de succession et de similitude.'¹

But though it is universally recognized as the special province of physical science to ascertain the antecedent conditions and circumstances, themselves phenomena, upon which phenomena arise, we have seen that this presupposes at every step a great deal more than phenomena; that physical science proceeds on the assumptions of Realism, and cannot dispense with them, although to investigate and appraise those assumptions would be to travel beyond its sphere. The very word 'phenomena,' by which science properly designates its facts, suggests by implication other facts which do not appear; and it has been shown, among other examples, that we cannot call the world external except by ascribing to certain of the phenomena of consciousness a cause outside ourselves. Then we identify with this cause the effects it produces on us, and call them external perceptions, or objects. Now the cause here is not

¹ *Cours de Philosophie Positive*, i., 16, 17.

an antecedent phenomenon, but a '*cause génératrice*.' And it is only by recognizing it that we can escape from extreme Idealism. It is true, indeed, that science, proceeding on the assumption that the world is external, does not itself discuss the question of the '*cause génératrice*' involved in so doing, but confines itself to the relations of the phenomena regarded as external; but none the less science in regarding them so, takes for granted the '*cause génératrice*,' and at every step reposes on the assumption. So, again, the recognition of energy as distinguished from its effects—the phenomena of movement—is the recognition of something which is not a phenomenon, but a '*cause génératrice*' assumed in order to account for them. The doctrine of energy, therefore, seems quite incompatible with the positive stage of philosophy as expounded by Comte. Neither, we have seen, are the phenomena of the past, of which science makes such ample use, phenomena any longer in the strict sense of the word, and to assume that they ever were, we must go far beyond what appears. It is the same with the permanent Ego, and with the minds of others. In these, among other instances, we are compelled to draw inferences transcending phenomena respecting what is not found among them. Indeed, it is only by the exercise of reason upon a whole world of facts assumed to be past and to be distant, as well as upon the extremely insignificant fact which chances to be now and here present to consciousness and which alone is strictly *the phenomenon*, it is only by thus assuming and representing multifarious and absent facts in the unity of consciousness, that there can be any scientific investigation of the world, or any world known to investigate.

It is in virtue, and only in virtue of such inferences, that we regard certain phenomena as symbols of powers or realities outside consciousness, which we can never reach or know in themselves. And besides reading in our external perceptions powers or objects not ourselves, we draw further inferences as to the nature of these realities. For example, we infer that there is a something which abides amid the fugitive states of our consciousness, for if consciousness consisted simply of them, there would be nothing to account for the continuity of our life and nature, of which it is impossible to doubt. We designate this something the mind, or subject, or Ego. Again we infer that certain groups of external phenomena are the residence of conscious natures like our own, with which we hold intelligent converse by means of physical changes, and which form and execute designs. We draw such conclusions respecting our own natures and theirs, and we cannot but hold them, and act on them, with entire assurance.

But does anybody pretend that these inferences image to us adequately or accurately the realities of Being to which they conduct us? that hereby we know in its essence the nature of others, or our own? Nobody would say so; on the contrary, it is obvious that what we thus apprehend is not the reality as it is, but at best a conception indicative, and imperfectly representative of it. In other words, the conception to which we are led of a something permanent in our mental life, and in that of others, is itself but the symbol of a reality necessarily unknown.

We have, therefore, to deal with two sets of symbols. First, phenomena themselves are viewed as symbols of things or powers external which produce

them. Secondly, we draw certain inferences as to these external things—mental or other; we frame, not pictorial images, yet serviceable conceptions of forms of Being not found among phenomena, but inferred from them, which likewise are but symbols of the realities conceived. Phenomena, then, and conceptions derived from them, are all that we can know directly, and both are but symbols of inaccessible realities. Nor can we ever compare the symbols with the objects symbolized to judge whether or how far they resemble each other, since the realities are never before us. Nor can we be confuted if we deny their existence; only then we are landed in sheer Idealism. On the other hand, these conceptions are built up by the perpetual action of the realities upon us, if we rightly infer that such realities exist. They are, in fact, the realities *in their relations to us*; it is in this way, and thus only, that the realities affect us; this is their normal and proper influence upon us; and therefore these conceptions are not only indispensable in practice, but true for us, that is, relatively true. We move, then, entirely in a world of phenomena and conceptions; and the question is, are we to recognize anything behind them? If not, we are landed in extreme Idealism. If we do, these phenomena and conceptions become symbolic, and we virtually identify them with the realities they stand for. Our recognition of matter and mind, of self and others, depends upon these inferences, although for ordinary purposes we do not and need not bear in mind that the inferences are assumed. We treat the symbols as being the things symbolized, and no harm accrues from our doing so, in practice, where the symbols alone confront us. Science takes this course, assumes with Realism that material

phenomena are material *objects*. And all goes well, and is self-consistent, so long as we keep within the bounds of the assumption; but when our investigations trench upon its nature, and when conclusions which are valid within its bounds are affirmed to hold good outside them, then we are involved in difficulty, and, if we persist in treating our science as a philosophy, in error. Of this error our teachers of science at present seem often guilty. They have reached various conclusions respecting (so-called) external objects, which receive daily confirmation, and possess practical certainty as truths respecting phenomena; but forgetting, or not aware of, the casual inference in virtue of which alone they are attributed to and identified with the external something assumed to produce them, they treat these conclusions respecting phenomena as truths valid respecting realities, and absolutely unassailable. We should commit a similar error if we failed to recognize that our conceptions, for example, of mind, in others and in ourselves, are simply symbolic of realities whose essential nature is wholly unknown to us. None the less these conceptions are relatively true for us, and practically quite reliable; experience, that is to say, the action of the corresponding realities on us, has suggested and shaped them; it is in this way that the realities present themselves to those constituted as we are; and to refuse to employ these conceptions (if that were possible) on the ground that they cannot exactly resemble the realities, would be to throw away the chief significance and interest of our life because an ontological knowledge of its facts is impossible.

In what material respect is the case different with the nobler, but co-ordinate, conception of God? In

regard to it likewise, we should err if we failed to recognize its merely symbolic character, and that, ignorant as we are of all real Being, even our own, we must *à fortiori* be ignorant of His.

None the less, our conception of Him also, in proportion as it is fairly derived from all His manifestations which are accessible to us, is relatively true, and practically reliable, though confessedly imperfect. Our conceptions of God, as of others, vary according to our opportunities of knowledge, and our capacities of knowing, and the use we have made of both. But leaving personal variations out of account, our conceptions of God, as of others, have been suggested and shaped by His actions before us and upon us ; and to refuse to entertain any conception of Him which we may turn to practical account as an ennobling personal influence (in this case only too easy), on the ground that His real essence cannot be imaged in our conception, is to throw away, in a sublimer sense, the chief significance and interest of our life, because an ontological knowledge of God is impossible. At any rate, it is inconsistent to make free practical use of sundry other conceptions, as relatively true, though merely symbolic, while the conception of God, similarly relative, is rejected on the ground of its relativity. It is constantly assumed that our recognition of God should depend on our ability to know His essence ; but that is no more and no less possible in regard to Him than in regard to our fellows. We have such relative knowledge of Him as we have of them ; and it seems to be only because it is practically impossible to ignore them, while it is possible to ignore Him, that the one set of conceptions is taken, and the other is left.

The fact is, as expressed above, that we move in a world of mental appearances and conceptions, which, if we persistently refuse to transcend, we shut ourselves up in complete Idealism, to which nobody can thoroughly and practically adhere. We are compelled to treat these mental phenomena as signs of inaccessible realities and powers not presented to consciousness,—are compelled, that is, to ascribe these effects to true causes; and we do this so habitually and unconsciously that we merge the effects in the causes, and say, and believe, that we are confronted by the realities themselves. And we are confronted with the reality *in its relation to us*, that is, *in its effect on us*. It is thus with any external object which we say we perceive, even with that element in it directly produced from outside; but in every perception of an external object, by far the greater part of the composite whole is an assemblage of associated feelings not directly produced from without. Pre-eminently this is so with the material world apprehended in thought as a collective unity. Even such conceptions as mind and force, though plainly no more than symbolic of unknown realities, are freely spoken of as if they were adequate representatives, or rather exact equivalents of those realities, if, indeed, they are not regarded as identical with them. To this forgetfulness of the distinction between our conceptions and the realities for which they stand, many of our perplexities are due. We will persist in the illusion that conclusions which hold good of our conceptions of things, and may be valid enough for ordinary purposes, must hold equally and in all respects true of the things they represent. On the other hand, we have guarantees of the trustworthiness of these conceptions within practical limits,

because, having been built up by experience, that is to say (if we recognize their symbolic character at all), having been formed by the action of the realities upon us, any deviation from conformity to the reality which affected experience would soon be discovered and corrected.

Our mental life, then, is a perpetual interpretation of signs, a constant deciphering of phenomena, involving at every stage a recognition and belief of much which transcends the phenomena now and here present. And we are so accustomed to this universal symbolism that in ninety-nine cases out of a hundred we take the sign to be the thing signified without any question, and repudiate the distinction between them as a useless metaphysical subtlety. Our belief in the past, and in the world, and in our conscious fellow-creatures, are among the ninety-nine cases; our belief in God, which rests on similar grounds, is inconsistently made the hundredth and exceptional case.

The common supposition, then, that the material universe and the conscious beings around us are directly and indubitably known, and constitute a world of 'positive' facts on which reason can certainly pronounce without any exercise of faith, which, in the shape of irrational credulity, is requisite for the acceptance of religious or theistic convictions,—this widely prevalent notion, often assumed as unquestionable, is an entire mistake, based upon astonishing ignorance of the essential limitations of human knowledge, of which thinkers who lived in the very dawn of philosophy were perfectly aware. The fact is, that we are equally obliged to transcend phenomena, and to put faith in events and powers and realities which do not appear,

when we recognize the past, and the distant, the material universe, and the minds of men, as when we infer the existence of God and the unseen world. Science calls on us to exercise faith in many things which are not demonstrable by reason. Religion is worthy of faith only so far as its evidence satisfies reason. The faith, the confidence, which we feel in both should be exactly proportioned to the verdict of reason.

When the geologist and the biologist infer, from a wide study of the rocks and the animals before them, that countless ages and agencies have been required to produce them, and believe, and lead others to believe, that it was so, they travel immeasurably beyond the phenomena in many directions. Those appearances are to them signs rich with significance, and the sciences of geology and life enable them to interpret the signs. They infer from the rock and the animal, or rather from certain sensations of sight and of touch, a far past which no human eyes beheld, and even the existence of which assuredly they could not demonstrate to a sceptic ; but their faith is justified by reason. They infer also a power operating through those ages an orderly series of effects on an external universe, the law of the order being one of gradual development. But to arrive at the power, to recognize the world, they must far transcend the phenomena, and treat them as signs of stupendous realities which never appear. Reason has drawn the inferences, but faith must accept them on evidence short of demonstration. For the inferences do not bear the character of immediate and unquestionable knowledge. They form a series of steps into the unknown, in regard to no one of which is our confidence based upon proof. Our belief in an external

world and in power is based on an inference from effects to *efficient causes*, of the nature of which we are notoriously ignorant, of the existence of which we have nothing to call immediate knowledge. Science abandons them to metaphysicians, as if they were discarded abstractions; but science forgets that, unless she proceeded always on the assumption of external power as an efficient cause, she would have no material universe left her to study.

Our belief in the past, again, irresistible as it is, comes as near as possible to simple credulity, poorly disguised by the fashion of calling it an 'ultimate fact,' and so passing it by. Yet what would science be without the past? And what without the future? She proclaims the stability of nature with absolute confidence, and depends without the shadow of a doubt on the regular operation of physical laws, but she cannot do so without trusting the unknown future to make good every one of her predictions. And what is the ground of her trust? She must transcend phenomena to establish the uniformity of nature even in the past; and still further, an ever-renewed exercise of faith, unsupported by proof, is required to assert that the uniformity will continue through countless successive periods of the future. Some have called our belief in the constancy of nature an ultimate fact, a primary datum of consciousness, but such designations contribute nothing to the demonstration required. In all our generalizations from experience there is, as Mr. Mill writes, 'an assumption with regard to the course of nature and the order of the universe; namely, . . . that what happens once, will, under a sufficient degree of similarity of circumstances, happen again, and not only again, but

‘as often as the same circumstances recur.’¹ And again, ‘the proposition that the course of nature is ‘uniform, is the fundamental principle, or general ‘axiom, of induction.’² As to the evidence on which it reposes, Mr. Mill says, ‘I hold it to be itself an ‘instance of induction,’³ and he calls it ‘the ultimate ‘major premise of all inductions.’⁴ Obviously, it is an induction which carries us far beyond the ascertained facts; and whatever practical reliance it may obtain and justify, it is in strictness no more than a highly probable conclusion. Properly, therefore, Mr. Mill refers to it now and again with such qualifying expressions as these: ‘To certain facts, certain facts ‘always do, and, as we believe, will continue to, succeed.’⁵ ‘It is necessary to our using the word ‘cause, that we should believe not only that the antecedent always *has* been followed by the consequent, ‘but that, as long as the present constitution of things ‘endures, it *will* be so.’⁶ Our faith, then, in the declaration of science is a feeling of confidence arising upon evidence short of demonstration, but none the less of a kind to warrant firm conviction and practical reliance. In this respect, it is similar to the faith which we are called on to exercise in religion. So completely is Butler’s saying justified: ‘to us, probability is the very guide of life.’ Science, then, as well as religion, requires us to place a rational confidence in the stability of nature, that is to say, in the faithfulness of the Unsearchable Power and Intelligence upholding and directing all. ‘The just,’ we may still say—if we enlarge the meaning of the word to include

¹ *Logic*, vol. I., p. 337.

² *Ibid.*, p. 338.

³ *Ibid.*, p. 338.

⁴ *Ibid.*, p. 339.

⁵ *Ibid.*, p. 359.

⁶ *Ibid.*, p. 371.

intellectual exactness as well as moral rectitude—‘the just shall live by faith.’ And thus, without exaggeration, in the simplicity of truth, we might append to the great spiritual roll-call of faithful souls which tells how, ‘by faith Abraham went out, not knowing whither he went’; ‘of David also, and Samuel, and of the prophets who through faith subdued kingdoms, wrought righteousness, obtained promises, and out of weakness were made strong’; we might add to these, in all consistency, a list of the heroes of scientific investigation, and say, that by faith Galileo struck the right path in astronomy and physics, and Kepler discovered the laws of planetary motion, and Newton unravelled the mechanism of the heavens, and Lyell unveiled the epochs of the earth’s history, and Darwin obtained the clue to the endless diversities of animals and plants. For they all framed their theories, not having the innumerable facts on which they were based actually before them, not having in strictness seen them afar off, but were persuaded of them, and embraced them, through faith, faith in a boundless Past and a boundless Future, and in an illimitable universe sustained and directed by almighty and unchanging Power. The very scripture which has been quoted takes in this wider reference when it says, ‘Through faith we understand that the worlds were framed by the Word of God.’ For in all matters, scientific as well as religious, faith is the evidence, or demonstration, of things not seen, *πραγμάτων ἔλεγχος οὐ βλεπομένων*, the feeling of confidence in a conclusion sanctioned by reason which assures us of it, and so, to us, constitutes the demonstration. Nor is the necessity for faith, when thus understood, antagonistic to that spirit of scept-

ticism which is properly regarded as the animating spirit of scientific and philosophical enquiry. It is clear that in order to a thorough investigation of anything, there must be doubt to stimulate scrutiny at every point. But it is a curious and surprising mistake to suppose, as it is the fashion at present to do, that faith holds the place in religion which doubt occupies in science. On the contrary, careful investigation, prompted by our liability to error, is just as needful in religion as in science; and happy will it be for Christianity, and for the religious health, as well as for the mental invigoration of the Church, when her beliefs are avowedly and universally subjected to the check of honest and earnest enquiry. Christian teachers find one of their greatest discouragements in the widespread mental indifference which cares not to know. Scepticism is a natural reaction from it. It may favour credulity, but it hinders rational conviction, and renders impossible those higher forms of emotion which are excited by the intelligent apprehension of sublime truths.

